

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 C
 Edition : 21.08.92
 Replaces : 02.91
 Test oil : ISO-4113
 Combination no. : 0 403 476 098
 Injection pump
 Pump designation : PES6MW100/720RS1130
 EP type number : 0 413 406 122
 Governor
 Governor design. : RSV350...1075MWOA318
 -7
 Governor no. : 0 420 085 158

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 A

1st version kw : 111.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1060

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 7.4...7.6

100 s: (7.2...7.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.4...7.6

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1060

Del.quantity : 74.0...76.0

1000 : (72.0...78.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.20

Speed rpm : 1100...1110
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 7.40...7.60
Rack travel in mm : 2.00
Speed rpm : 450...510

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 1060
Rack travel in m: 11.20...11.30
2nd speed rpm : 600
Rack travel in m: 11.80...11.90
3rd speed rpm : 900
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 61.5...64.5
1000 s: (59.0...67.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.40...7.60
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 B 5
 Edition : 21.08.92
 Replaces : 09.91
 Test oil : ISO-4113
 Combination no. : 0 403 476 109
 Injection pump
 Pump designation : PES6MW100/72ORS1131-
 1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RSV350...1300MWOA329
 -10
 Governor no. : 0 420 085 178

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 155.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 105...113

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.0

Speed rpm : 1330...1335 *
2nd rack travel in: 4.00
Speed rpm : 1410...1423
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.80...6.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.20

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.00...11.10
2nd pressure hPa : 550
Rack travel in m: 12.40...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.10...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 85.0...88.0
1000 s: (82.5...90.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.0
Speed rpm : 1330...1335

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:
Test hydr. locking device for starting
with 500...1000 hPa air pressure.

* Read off speed set under 1.
Add 80...88 min-1 to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB6, 1B11
Edition : 21.08.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 403 476 110

Injection pump
Pump designation : PES6MW100/720RS1131-1

EP type number : 0 413 406 165

Governor

Governor design. : RSV350...1300MWOA329-11

Governor no. : 0 420 085 181

Customer-spec. information

Customer : MB-NFZ

Engine : OM366LA

1st version kW : 170.0

Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 14.40...14.50

Del. quantity cm³/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.1...6.3

Del. quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 1000

Del. quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 91...99

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.4

Speed rpm : 1330...1335 *
2nd rack travel in: 4.00
Speed rpm : 1410...1423
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 6.10...6.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.90...12.10
2nd pressure hPa : 500
Rack travel in m: 13.10...13.30
3rd pressure hPa : 1000
Rack travel in m: 14.40...14.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 106.5...109.5
1000 s: (104.0...112.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.4
Speed rpm : 1330...1335

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Test hydr. locking device for starting
with 500...1000 hPa air pressure.

* Read off speed set under 1.
Add 80...88 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 03.12.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 112
Injection pump
Pump designation : PES6MW100/72ORS1225-
1
EP type number : 0 413 406 220
Governor
Governor design. : RSV400...1000MW1A338
-1
Governor no. : 0 420 085 184

Customer-spec. information
Customer : LIEBHERR

Engine : D 916 TI

1st version kW : 173.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 13.20...13.30
Del.quantity cm3/ : 14.4...14.6
100 s: (14.2...14.8)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 6.1...6.3
Del.quantity cm3/ : 2.0...2.4
100 s: (1.8...2.7)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 144.0...146.0
1000 : (142.0...148.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 96...104

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.20
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1060...1090
3rd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.20...13.30
2nd speed rpm : 500
Rack travel in m: 13.20...13.30
3rd speed rpm : 700
Rack travel in m: 13.20...13.30
5th speed rpm : 400
Rack travel in m: 14.40...14.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : -
Rack travel mm : 11.10...11.30

Measurement

Speed 1/min : 550

1st pressure hPa : 330
Rack travel in m: 11.60...11.70
2nd pressure hPa : 510
Rack travel in m: 12.50...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

A08

Speed rpm : 500
Del.quantity cm3/ : 142.0...145.0
1000 s: (139.5...147.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm3/ : 145.0...148.0
1000 s: (142.5...150.5)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 104.0...106.0
1000 s: (102.0...108.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 127.0...137.0
1000 s: (124.0...140.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 20.5...24.5
1000 s: (18.0...27.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 03.12.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 112A
Injection pump
Pump designation : PES6MW100/720RS1225-
1
EP type number : 0 413 406 220
Governor
Governor design. : RSV400...1000MW1A338
-1
Governor no. : 0 420 085 184

Customer-spec. information
Customer : LIEBHERR

Engine : D 916 TI

1st version kW : 173.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 13.20...13.30
Del.quantity cm3/ : 14.4...14.6
100 s: (14.2...14.8)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 6.1...6.3
Del.quantity cm3/ : 2.0...2.4
100 s: (1.8...2.7)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 144.0...146.0
1000 : (142.0...148.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 96...104

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.20
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1060...1090
3rd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.20...13.30
2nd speed rpm : 500
Rack travel in m: 13.20...13.30
3rd speed rpm : 700
Rack travel in m: 13.20...13.30
5th speed rpm : 400
Rack travel in m: 14.40...14.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : -
Rack travel mm : 11.10...11.30

Measurement

Speed 1/min : 550

1st pressure hPa : 330
Rack travel in m: 11.60...11.70
2nd pressure hPa : 510
Rack travel in m: 12.50...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 500
Del.quantity cm3/ : 142.0...145.0
1000 s: (139.5...147.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm3/ : 145.0...148.0
1000 s: (142.5...150.5)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 104.0...106.0
1000 s: (102.0...108.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 127.0...137.0
1000 s: (124.0...140.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 20.5...24.5
1000 s: (18.0...27.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 403 476 114

Injection pump
Pump designation : PES6MW100/720RS1131-
1
EP type number : 0 413 406 165
Governor
Governor design. : RSV750...1100MW0A325
-4
Governor no. : 0 420 085 188

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 170.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 13.00...13.10

Del. quantity cm³/ : 10.3...10.5
100 s : (10.1...10.7)

Spread cm³ : 0.3
100 s : (0.6)

2nd speed rpm : 750.0
Rack travel in mm : 5.8...6.3
Del. quantity cm³/ : 1.0...1.4
100 s : (0.7...1.6)
Spread cm³ : 0.3
100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1080
Del. quantity : 103.0...105.0
1000 : (101.0...107.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 82...90

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:
1st rack travel in: 12.0
Speed rpm : 1120..1125 *

2nd rack travel in: 4.00
Speed rpm : 1145...1158
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 750
Rack travel in mm : 5.80...6.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 13.00...13.10
2nd speed rpm : 925
Rack travel in m: 13.40...13.60
3rd speed rpm : 750
Rack travel in m: 13.90...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 108.0...111.0
1000 s: (105.5...113.5)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.0
Speed rpm : 1120...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 750
Rack travel in mm : 5.80...6.30

A12

Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

* Read off speed set under 1.
Add 25...33 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 403 476 116
 Injection pump
 Pump designation : PES6MW100/720RS1131
 EP type number : 0 413 406 123
 Governor
 Governor design. : RSV350...1300MWA329
 -14
 Governor no. : 0 420 085 192

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 125.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.5

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 800

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 110...118

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.50

Speed rpm : 1330...1335 *

2nd rack travel in: 4.00

Speed rpm : 1410...1423
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.00...5.50
Rack travel in mm : 2.00
Speed rpm : 420...480

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1280
Rack travel in m: 10.50...10.60
2nd speed rpm : 800
Rack travel in m: 11.20...11.30
3rd speed rpm : 1100
Rack travel in m: 10.80...11.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.20...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.70...9.90
2nd pressure hPa : 470
Rack travel in m: 10.50...10.70
3rd pressure hPa : 800
Rack travel in m: 11.20...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 800
Del.quantity cm3/ : 88.0...91.0
1000 s: (85.5...93.5)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1330...1335

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.00...5.50
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

* Read off speed set under 1.
Add 80...88 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 403 476 117

Injection pump
Pump designation : PES6MW100/720RS1131-1

EP type number : 0 413 406 165
Governor
Governor design. : RSV750...1200MWA329-15
Governor no. : 0 420 085 193

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 148.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 750.0

Rack travel in mm : 4.8...5.3

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Aneroid pressure h: 1000

Del.quantity : 106.0...108.0

1000 : (104.0...110.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.2
Speed rpm : 1230...1235
2nd rack travel in: 4.00
Speed rpm : 1310...1323
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 750
Rack travel in mm : 4.80...5.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.30...9.40

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 10.80...10.90
2nd pressure hPa : 500
Rack travel in m: 11.80...12.10
3rd pressure hPa : 1000
Rack travel in m: 13.10...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 95.5...98.5
1000 s: (93.0...101.0)
Spread cm3 : 3.50
1000 s: (6.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.2
Speed rpm : 1230...1235

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 750
Rack travel in mm : 4.80...5.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Test hydr. locking device for starting
with 500...1000 hPa air pressure.

* Read off speed set under 1.
Add 80...88 min-1 to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 403 476 120
 Injection pump
 Pump designation : PES6MW100/72ORS1131-
 1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RSV350...750MWDA336-
 6
 Governor no. : 0 420 085 198

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 LA

1st version kw : 87.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.50...12.60
 Del.quantity cm3/ : 8.5...8.7
 100 s: (8.3...8.9)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.3...6.3
 Del.quantity cm3/ : 0.9...1.3
 100 s: (0.6...1.5)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 2.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 85.0...87.0
 1000 : (83.0...89.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 71...79

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.5

Speed rpm : 750...755 *

2nd rack travel in: 4.00

Speed rpm : 775...788

4th rack travel in: 850

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 57...61

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.8

Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 350

Rack travel in mm : 5.30...6.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.5

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 88.0...98.0

1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.30...6.30

Del.quantity cm³/ : 9.0...13.0

1000 s: (6.5...15.5)

Spread cm³ : 3.50

1000 s: (5.50)

Remarks:

:

* Read off speed set under 1.

Add 25...33 min⁻¹ to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 21.09.92
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 403 476 121

Injection pump
Pump designation : PES6MW100/320RS1198-1

EP type number : 0 413 406 211
Governor
Governor design. : RSV35C...1250MW2A347-1

Governer no. : 0 420 085 199

Customer-spec. information
Customer : NAVISTAR

Engine : DT-466

1st version kW : 172.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 13.2...13.4

100 s: (13.0...13.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 4.6...4.8
Del.quantity cm3/ : 1.5...1.9
100 s: (1.3...2.2)

Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Aneroid pressure h: 900
Del.quantity : 132.5...134.5
1000 : (130.5...136.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 96...104

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.10
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1345...1355
3rd rack travel in: 4.00
Speed rpm : 1350...1380
4th rack travel in: 1500
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 4.60...4.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 500
Rack travel in m: 8.80...9.00
2nd pressure hPa : 260
Rack travel in m: 10.20...10.30
3rd pressure hPa : 500
Rack travel in m: 11.30...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 80.5...84.5
1000 s: (78.5...86.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

A20

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...165.0
1000 s: (140.0...170.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

: IHC #1819527C91

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 05.10.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 122
Injection pump
Pump designation : PES6MW100/320RS1227
EP type number : G 413 406 215
Governor
Governor design. : RSV325...1300MWA350
Governor no. : 0 420 085 200

Cust. part no. : 1249933

Customer-spec. information
Customer : DAF

Engine : NS156L

1st version kW : 156.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

A21

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 13.50...0.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 13.10...13.20
Del. quantity cm³/ : 10.8...11.0
100 s: (10.6...11.2)
Spread cm³ : 0.3
100 s: (0.6)

2nd speed rpm : 325.0
Rack travel in mm : 4.4...4.6
Del. quantity cm³/ : 0.7...1.1
100 s: (0.4...1.3)
Spread cm³ : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del. quantity : 108.5...110.5
1000 : (106.5...112.5)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.10
Speed rpm : 1330...1340
2nd rack travel in: 4.00
Speed rpm : 1400...1430
3rd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 4.0

Testing:

Speed rpm : 100
Speed rpm : 325
Rack travel in mm : 3.90...4.10
Rack travel in mm : 2.00
Speed rpm : 450...520

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 600

1st pressure hPa : 500
Rack travel in m: 12.50...12.60
2nd pressure hPa : 290
Rack travel in m: 11.10...11.40
3rd pressure hPa : -
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1300
Del.quantity cm3/ : 104.0...107.0
1000 s: (101.5...109.5)
Spread cm3 : 3.50
1000 s: (6.0)
Aneroid pressure h: -
Speed rpm : 600

Del.quantity cm3/ : 63.0...65.0
1000 s: (61.0...67.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1330...1340

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.40...4.60
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: DAF #1249933

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 21.08.92
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 403 476 124

Injection pump
Pump designation : PES6MW100/32ORS1213
EP type number : 0 413 406 203
Governor
Governor design. : RSV350...1150MW8A347
-2

Governer no. : 0 420 085 202

Cust. part no. : 1818557C91

Customer-spec. information
Customer : NAVISTAR

Engine : DT-466

1st version kw : 204.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.90...15.00

Del.quantity cm³/ : 16.4...16.6

100 s: (16.2...16.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 164.5...166.5

1000 : (162.5...168.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.90
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1230...1240
3rd rack travel in: 4.00
Speed rpm : 1235...1245
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.00...5.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.90...15.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.70
2nd pressure hPa : 300
Rack travel in m: 11.10...11.20
3rd pressure hPa : 760
Rack travel in m: 13.20...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 79.5...83.5
1000 s: (77.5...85.5)

BREAKAWAY

1st version

A24

1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...190.0
1000 s: (165.0...195.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

: IHC #1818557C91

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 31.08.92
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 403 476 125

Injection pump
Pump designation : PES6MW100/320RS1198-1

EP type number : 0 413 406 211

Governor

Governor design. : RSV350...1100MW2A347-3

Governer no. : 0 420 085 203

Customer-spec. information

Customer : NAVISTAR

Engine : DT-466

1st version kW : 184.0

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing :

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 13.9...14.1

100 s: (13.7...14.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 139.0...141.0

1000 : (137.0...143.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1205
3rd rack travel in: 4.00
Speed rpm : 1200...1210
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 4.80...5.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 255
Rack travel in m: 10.30...10.40
3rd pressure hPa : 535
Rack travel in m: 11.70...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 83.0...87.0
1000 s: (81.0...89.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
1000 s: (147.0...173.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

: IHC #1819454C91

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VME
Edition : 03.12.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 126
Injection pump
Pump designation : PES6MW100/320RS1132
EP type number : 0 413 406 124
Governor
Governor design. : RSV300...1050MW4A352
Governor no. : 0 420 085 201

Customer-spec. information
Customer : VME

Engine : TD 61

1st version kw : 122.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00
: (2.85...3.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 92.0...94.0

1000 : (90.0...96.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.10

Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1110...1140
3rd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1000
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 1000

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 80
Rack travel in m: 10.30...10.40
3rd pressure hPa : 140
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 1000
Del.quantity cm3/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 03.12.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 127
Injection pump
Pump designation : PES6MW100/72ORS1205
EP type number : 0 413 406 195
Governor
Governor design. : RSV750...1250MWOA325
-5
Governor no. : 0 420 085 208

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 LA

1st version kw : 185.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30
: (3.15...3.35)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1230

Rack travel in mm : 15.20...15.30

Del.quantity cm3/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 750.0

Rack travel in mm : 4.9...5.5

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 1.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1230

Del.quantity : 124.0...126.0

1000 : (122.0...128.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 14.2

Speed rpm : 1270...1275 *
2nd rack travel in: 4.00
Speed rpm : 1295...1308
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 750
Rack travel in mm : 4.90...5.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm³/ : 120.0...123.0
1000 s: (117.5...125.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.2
Speed rpm : 1270...1275

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 110.0...120.0
1000 s: (107.0...123.0)

LOW IDLE

Speed rpm : 750
Rack travel in mm : 4.90...5.50
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

:

* Read off speed set under 1.
Add 25...33 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,3 B
Edition : 27.11.92
Replaces : 09.91
Test oil : ISO-4113

Combination no. : 0 403 486 103

Injection pump
Pump designation : PES6MW100/321RS1208
EP type number : 0 413 406 199
Governor
Governor design. : RSV300...1050MW0A802
-2
Governor no. : 0 420 085 156

Customer-spec. information
Customer : MAN

Engine : D0826LE 10

1st version kW : 165.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 14.0...14.2

100 s: (13.8...14.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 140.0...142.0

1000 : (138.0...144.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 87...95

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.00

Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 300
Rack travel in mm : 5.00...5.20

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 139.5...142.5
1000 s: (137.0...145.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 800
Del.quantity cm3/ : 145.5...148.5
1000 s: (143.0...151.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (127.0...153.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7103

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 548 027AA

Injection pump
Pump designation : PE8MW100/72CLS1173
EP type number : 0 413 508 108
Governor
Governor design. : RQV300...1150MW99
Governor no. : 0 420 083 163

Customer-spec. information
Customer : KHD

Engine : F8L513

1st version kw : 163.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 9.3...9.5
100 s: (9.1...9.7)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.1
Del.quantity cm3/ : 1.1...1.5
100 s: (0.8...1.7)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
travel mm : 11.10...11.50
2nd speed rpm : 1190
travel mm : 10.10...10.30
3rd speed rpm : 400
travel mm : 2.90...3.50
4th speed rpm : 300
travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1200
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del.quantity : 93.0...95.0
1000 : (91.0...97.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Setting point:
Speed rpm : 1200
Rack travel in mm : 16.5

Testing:
1st rack travel in: 9.50
Speed rpm : 1190...1200
2nd rack travel in: 3.50
Speed rpm : 1280...1310
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.50...10.60
2nd speed rpm : 650
Rack travel in m: 10.80...10.90
3rd speed rpm : 1000
Rack travel in m: 10.70...10.80

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 91.5...94.5
1000 s: (89.0...97.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

B06

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 548 027AB
Injection pump
Pump designation : PE8MW100/720LS1173
EP type number : 0 413 508 108
Governor
Governor design. : RQV300...1150MW99
Governor no. : 0 420 083 163

Customer-spec. information
Customer : KHD

Engine : F8L513

1st version kW : 170.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 10.60...10.70
Del.quantity cm3/ : 9.4...9.6
100 s: (9.2...9.8)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.1
Del.quantity cm3/ : 1.1...1.5
100 s: (0.8...1.7)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
travel mm : 11.10...11.50
2nd speed rpm : 1190
travel mm : 10.10...10.30
3rd speed rpm : 400
travel mm : 2.90...3.50
4th speed rpm : 300
travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1200
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del.quantity : 94.0...96.0
1000 : (92.0...98.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Setting point:
Speed rpm : 1200
Rack travel in mm : 16.5

Testing:
1st rack travel in: 9.60
Speed rpm : 1190...1200
2nd rack travel in: 3.50
Speed rpm : 1280...1310
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.60...10.70
2nd speed rpm : 650
Rack travel in m: 10.90...11.00
3rd speed rpm : 1000
Rack travel in m: 10.80...10.90

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 92.5...95.5
1000 s: (90.0...98.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

B08

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 548 027AC
Injection pump
Pump designation : PE8MW100/720LS1173
EP type number : 0 413 508 108
Governor
Governor design. : RQV300...1150MW99
Governor no. : 0 420 083 163

Customer-spec. information
Customer : KHD

Engine : F8L513

1st version kW : 178.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280

travel mm : 11.10...11.50

2nd speed rpm : 1190

travel mm : 10.10...10.30

3rd speed rpm : 400

travel mm : 2.90...3.50

4th speed rpm : 300

travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 99.0...101.0

1000 : (97.0...103.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Setting point:
Speed rpm : 1200
Rack travel in mm : 16.5

Testing:
1st rack travel in: 10.00
Speed rpm : 1190...1200
2nd rack travel in: 3.50
Speed rpm : 1285...1315
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.00...11.10
2nd speed rpm : 650
Rack travel in m: 11.30...11.40
3rd speed rpm : 1000
Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 98.5...101.5
1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replacer : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 027AD
 Injection pump
 Pump designation : PE8MW100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQV300...1150MW99
 Governor no. : 0 420 083 163

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kW : 174.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 10.80...10.90
 Del.quantity cm3/ : 9.7...9.9
 100 s: (9.5...10.1)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.1
 Del.quantity cm3/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
 travel mm : 11.10...11.50
 2nd speed rpm : 1190
 travel mm : 10.10...10.30
 3rd speed rpm : 400
 travel mm : 2.90...3.50
 4th speed rpm : 300
 travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1200
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 97.0...99.0
 1000 : (95.0...101.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Setting point:
Speed rpm : 1200
Rack travel in mm : 16.5

Testing:
1st rack travel in: 9.80
Speed rpm : 1190...1200
2nd rack travel in: 3.50
Speed rpm : 1285...1315
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.80...10.90
2nd speed rpm : 650
Rack travel in m: 11.10...11.20
3rd speed rpm : 1000
Rack travel in m: 11.00...11.10

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 96.5...99.5
1000 s: (94.0...102.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 548 027AE

Injection pump
Pump designation : PE8MW100/720LS1175
EP type number : 0 413 508 108
Governor
Governor design. : RQV300...1150MW99
Governor no. : 0 420 083 163

Customer-spec. information
Customer : KHD

Engine : F8L513

1st version kw : 188.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 11.2...11.4
100 s: (11.0...11.6)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.1
Del.quantity cm3/ : 1.1...1.5
100 s: (0.8...1.7)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
travel mm : 11.10...11.50
2nd speed rpm : 1190
travel mm : 10.10...10.30
3rd speed rpm : 400
travel mm : 2.90...3.50
4th speed rpm : 300
travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1200
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del.quantity : 112.0...114.0
1000 : (110.0...116.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Setting point:
Speed rpm : 1200
Rack travel in mm : 16.5

Testing:
1st rack travel in: 10.80
Speed rpm : 1190...1200
2nd rack travel in: 5.50
Speed rpm : 1290...1320
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.80...11.90
2nd speed rpm : 650
Rack travel in m: 12.10...12.20
3rd speed rpm : 1000
Rack travel in m: 12.00...12.10

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 110.5...113.5
1000 s: (108.0...116.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 548 027AF

Injection pump
Pump designation : PE8MW100/720LS1173
EP type number : 0 413 508 108
Governor
Governor design. : RQV300...1150MW99
Governor no. : 0 420 083 163

Customer-spec. information
Customer : KHD

Engine : F8L513

1st version kW : 168.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 10.70...10.80
Del. quantity cm³/ : 9.6...9.8
100 s: (9.4...10.0)
Spread cm³ : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.1
Del. quantity cm³/ : 1.1...1.5
100 s: (0.8...1.7)
Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
travel mm : 11.10...11.50
2nd speed rpm : 1190
travel mm : 10.10...10.30
3rd speed rpm : 400
travel mm : 2.90...3.50
4th speed rpm : 300
travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1200
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del. quantity : 96.0...98.0
1000 : (94.0...100.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Setting point:
Speed rpm : 1200
Rack travel in mm : 16.5

Testing:
1st rack travel in: 9.70
Speed rpm : 1190...1200
2nd rack travel in: 3.50
Speed rpm : 1280...1310
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.70...10.80
2nd speed rpm : 650
Rack travel in m: 11.00...11.10
3rd speed rpm : 1000
Rack travel in m: 10.90...11.00

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 92.5...95.5
1000 s: (90.0...98.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 548 032AD
Injection pump
Pump designation : PE8MW100/720LS1173
EP type number : 0 413 508 108
Governor
Governor design. : RQ300/1150MW61-2
Governor no. : 0 420 082 036

Customer-spec. information
Customer : KHD

Engine : F8L513

1st version kW : 163.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 10.30...10.40
Del. quantity cm³/ : 8.9...9.1
100 s: (8.7...9.3)
Spread cm³ : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.1
Del. quantity cm³/ : 1.1...1.5
100 s: (0.8...1.7)
Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1270
travel mm : 8.60...9.00
2nd speed rpm : 1210
travel mm : 6.60...6.80
3rd speed rpm : 420
travel mm : 3.50...4.10
4th speed rpm : 300
travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: 107
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del. quantity : 89.0...91.0
1000 : (87.0...93.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 26...34

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 9.30
Speed rpm : 1190...1205
2nd rack travel in: 3.50
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.30...10.40
2nd speed rpm : 650
Rack travel in m: 10.60...10.70
3rd speed rpm : 1000
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 82.5...85.5
1000 s: (80.0...88.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1190...1205

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 548 032AE
Injection pump
Pump designation : PE8MM100/720LS1173
EP type number : 0 413 508 108
Governor
Governor design. : RQ300/1150MW61-2
Governor no. : 0 420 082 036

Customer-spec. information
Customer : KHD

Engine : F8L513

1st version kW : 188.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 11.80...11.90
Del.quantity cm3/ : 11.2...11.4
100 s: (11.0...11.6)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 4.9...5.1
Del.quantity cm3/ : 1.1...1.5
100 s: (0.8...1.7)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1270
travel mm : 8.60...9.00
2nd speed rpm : 1210
travel mm : 6.60...6.80
3rd speed rpm : 420
travel mm : 3.50...4.10
4th speed rpm : 300
travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: 107
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del.quantity : 112.0...114.0
1000 : (110.0...116.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 26...34

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.80
Speed rpm : 1190...1205
2nd rack travel in: 3.50
Speed rpm : 1245...1275
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.80...11.90
2nd speed rpm : 650
Rack travel in m: 12.10...12.20
3rd speed rpm : 1000
Rack travel in m: 12.00...12.10

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 110.5...113.5
1000 s: (108.0...116.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1190...1205

STARTING FUEL DELIVERY

B20

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 032AF
 Injection pump :
 Pump designation : PE8MW100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQ300/1150MW61-2
 Governor no. : 0 420 082 036

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kW : 168.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 10.70...10.80
 Del.quantity cm3/ : 9.6...9.8
 100 s: (9.4...10.0)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.1
 Del.quantity cm3/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1270
 travel mm : 8.60...9.00
 2nd speed rpm : 1210
 travel mm : 6.60...6.80
 3rd speed rpm : 420
 travel mm : 3.50...4.10
 4th speed rpm : 300
 travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 107
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 96.0...98.0
 1000 : (94.0...100.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 26...34

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 9.70
Speed rpm : 1190...1205
2nd rack travel in: 3.50
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.70...10.80
2nd speed rpm : 650
Rack travel in m: 11.00...11.10
3rd speed rpm : 1000
Rack travel in m: 10.90...11.00

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 92.5...95.5
1000 s: (90.0...98.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1190...1205

STARTING FUEL DELIVERY

B22

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 548 033AA
Injection pump
Pump designation : PE8MW100/720LS1173
EP type number : 0 413 508 108
Governor
Governor design. : RGV450...1150MW70-1
Governor no. : 0 420 083 179

Customer-spec. information
Customer : KHD

Engine : F8L513

1st version kW : 178.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 11.80...11.90
Del. quantity cm³/ : 11.4...11.6
100 s: (11.2...11.8)
Spread cm³ : 0.3
100 s: (0.6)

2nd speed rpm : 450.0
Rack travel in mm : 4.6...4.8
Del. quantity cm³/ : 1.1...1.5
100 s: (0.8...1.7)
Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1230
travel mm : 9.50...9.90
2nd speed rpm : 1190
travel mm : 8.90...9.10
3rd speed rpm : 650
travel mm : 2.80...3.40
4th speed rpm : 450
travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del. quantity : 114.0...116.0
1000 : (112.0...118.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Setting point:
Speed rpm : 1150
Rack travel in mm : 16.5

Testing:
1st rack travel in: 10.80
Speed rpm : 1155...1165
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1320
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 14...22
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 450
Rack travel in mm : 4.60...4.80

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.80...11.90
3rd speed rpm : 700
Rack travel in m: 11.70...12.00

START CUT-OUT

Speed 1/min : 370 (390)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1155...1165

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...150.0
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 450

B24

Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 13,4 F3
 Edition : 05.10.92
 Replaces : 03.90
 Test oil : ISO-4113
 Combination no. : 0 403 548 035
 Injection pump
 Pump designation : PE8MW100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQ300/1000MW104-1
 Governor no. : 0 420 082 041

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kW : 150.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

travel mm : 8.80...9.20

2nd speed rpm : 1060

travel mm : 6.90...7.10

3rd speed rpm : 450

travel mm : 4.20...4.80

4th speed rpm : 300

travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 87.0...89.0

1000 : (85.0...91.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 89...97

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.00
Speed rpm : 1040...1055
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 10.00...10.10
2nd speed rpm : 700
Rack travel in m: 11.20...11.30
3rd speed rpm : 900
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 100.5...103.5
1000 s: (98.0...106.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1040...1055

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Set warm starting fuel delivery
100...105 cm³ /1000 strokes at
n = 100 min⁻¹ at spool

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 q 15
 Edition : 27.11.92
 Replaces : 4.86
 Test oil : ISO-4113
 Combination no. : 9 400 085 283
 Injection pump
 Pump designation : PES6A90D410RS2293
 EP type number : 0 410 896 031
 Governor
 Governor design. : RSV350...1250A0B1150
 -3L
 Governor no. : 9 420 083 221
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM 352-A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 10.00...10.10
 Del. quantity cm³/ : 6.1...6.2
 100 s: (5.9...6.4)
 Spread cm³ : 0.3
 100 s: (0.4)
 2nd speed rpm : 350.0
 Rack travel in mm : 7.1...7.3
 Del. quantity cm³/ : 0.9...1.5
 100 s: (0.7...1.7)
 Spread cm³ : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del. quantity : 61.5...62.5
 1000 : (59.5...64.5)
 Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees: 100...108

Testing:
 1st rack travel in: 9.00
 Speed rpm : 1290...1300
 2nd rack travel in: 4.00
 Speed rpm : 1335...1365
 4th rack travel in: 1450
 Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 72...80

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.7

Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 350

Rack travel in mm : 7.10...7.30

Rack travel in mm : 2.00

Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.00...10.10

2nd speed rpm : 500

Rack travel in m: 10.00...10.20

5th speed rpm : 400

Rack travel in m: 11.20...11.80

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 200

Rack travel in mm : 14.20...14.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 i
Edition : 27.11.92
Replaces : 12.91
Test oil : ISO-4113
Combination no. : 9 400 085 333
Injection pump
Pump designation : PES4A95D41ORS2805
EP type number : 9 400 084 026
Governor
Governor design. : RQV300...1400AB1065-21L
Governor no. : 9 420 080 303

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 66.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.70...9.80

Del.quantity cm3/ : 7.1...7.3

100 s: (6.9...7.5)

Spread cm3 : 0.3

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...7.6

Del.quantity cm3/ : 0.5...1.1

100 s: (0.3...1.3)

Spread cm3 : 0.3

100 s: (0.3)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.50...8.60

2nd speed rpm : 300

travel mm : 0.80...1.30

3rd speed rpm : 500

travel mm : 2.30...2.80

4th speed rpm : 750

travel mm : 4.10...4.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 71.0...73.0

1000 : (69.0...75.0)

Spread cm3 : 3.50

1000 : (3.50)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:
1st rack travel in: 8.70
Speed rpm : 1460...1470
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1680
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 65...73

Testing:
Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 7.40...7.60

CONSTANT REGULATION
Speed rpm : 480...630

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm3/ : 55.0...58.0
1000 s: (52.5...60.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.70
Speed rpm : 1460...1470

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...90.0
1000 s: (75.0...93.0)
Rack travel in mm : 13.80...14.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 23.10.92
 Replaces : 08.92
 Test oil : ISO-4113
 Combination no. : 9 400 085 348
 Injection pump
 Pump designation : PES6A95D41ORS2812
 EP type number : 9 400 084 028
 Governor
 Governor design. : RSV350...900A7C627
 -3R
 Governor no. : 9 420 083 263

Customer-spec. information
 Customer : MWM

Engine : 6.10 TCA

1st version kW : 154.5
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 1.50...2.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 13.6...13.8

100 s: (13.4...14.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 136.5...138.5

1000 : (134.5...140.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever
position degrees: 102...110

Testing:

1st rack travel in: 13.00
Speed rpm : 900...905
2nd rack travel in: 4.00
Speed rpm : 941...954
4th rack travel in: 1100
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 365...425

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 13.90...14.00
2nd speed rpm : 550
Rack travel in m: 13.90...14.10
5th speed rpm : 400
Rack travel in m: 15.20...15.80

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 900...905

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

CO4

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 23.10.92
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 085 350

Injection pump
Pump designation : FES6A95D41GRS2772
EP type number : 9 400 084 018
Governor
Governor design. : RQV300...1300AB1066
-12L
Governor no. : 9 420 080 331

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 154.5
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.08)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.10...11.20

Del. quantity cm³/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.1

Del. quantity cm³/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 10.10
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1490...1520
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION
Speed rpm : 420...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.90
2nd pressure hPa : 400
Rack travel in m: 10.30...10.40
3rd pressure hPa : 270
Rack travel in m: 9.00...9.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm³/ : 86.0...89.0
1000 s: (83.5...91.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 44.0...46.0
1000 s: (42.0...48.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...90.0
1000 s: (-)
Rack travel in mm : 13.60...13.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
Edition : 27.11.92
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 087 458
Injection pump
Pump designation : PE6P120A320RS3186
EP type number : 0 411 826 756
Governor
Governor design. : RQV250...1025PA657
-29
Governor no. : 9 420 080 312

Customer-spec. information
Customer : VOLVO

Engine : TD102FS

1st version kW : 250.0
Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
: (2.55...2.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.9...4.1

Del.quantity cm3/ : 1.6...2.1

100 s: (1.3...2.3)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.10...1.30

2nd speed rpm : 500
travel mm : 4.10...4.90

3rd speed rpm : 700
travel mm : 6.30...6.70

4th speed rpm : 900
travel mm : 6.30...6.70

5th speed rpm : 1025
travel mm : 7.30...7.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000
Del.quantity : 210.0...212.0
1000 : (207.0...215.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 11.10
Speed rpm : 1055...1065
2nd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 5.40
Speed rpm : 250
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.70...9.00
2nd pressure hPa : 75
Rack travel in m: 8.90...9.10 *
3rd pressure hPa : 425
Rack travel in m: 11.40...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700

Del.quantity cm3/ : 146.0...148.0
1000 s: (143.0...151.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1055...1065

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...290.0
1000 s: (246.0...294.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.90...4.10
Del.quantity cm3/ : 16.0...21.0
1000 s: (13.5...23.5)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 27.11.92
Replaces : 05.92
Test oil : ISO-4113
Combination no. : 9 400 087 464
Injection pump
Pump designation : PES6P120A72GLS7257
EP type number : 9 400 087 081
Governor
Governor design. : RQV300...1050PA1029
Governor no. : 9 420 080 325

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 447 LA

1st version kW : 257.6
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70
: (4.55...4.75)
Rack travel in mm : 21.00...0.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 25.8...26.0

100 s: (25.5...26.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.1...5.4

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 7.70...7.90

2nd speed rpm : 300

travel mm : 0.50...1.00

3rd speed rpm : 500

travel mm : 3.00...3.50

4th speed rpm : 700

travel mm : 5.20...5.70

5th speed rpm : 1165

travel mm : 9.20...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 258.0...260.0
1000 : (255.0...263.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.40...13.60
2nd speed rpm : 700
Rack travel in m: 13.60...13.80
3rd speed rpm : 850
Rack travel in m: 13.60...13.80
4th speed rpm : 950
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.10
2nd pressure hPa : 250

Rack travel in m: 10.20...10.40
3rd pressure hPa : 700
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 244.5...247.5
1000 s: (241.5...250.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 124.0...126.0
1000 s: (121.0...129.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...270.0
1000 s: (246.0...274.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 27.11.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 466
 Injection pump
 Pump designation : PES6P120A720LS7257
 EP type number : 9 400 087 081
 Governor
 Governor design. : RQV300...1050PA1029
 -2
 Governor no. : 9 420 080 327

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 447 LA

1st version kw : 301.8
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70
 : (4.55...4.75)
 Rack travel in mm : 21.00...0.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.20

Del.quantity cm3/ : 31.3...31.5

100 s: (31.0...31.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.1...5.4

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 7.30...7.50

2nd speed rpm : 300

travel mm : 0.50...1.00

3rd speed rpm : 500

travel mm : 3.10...3.60

4th speed rpm : 700

travel mm : 4.80...5.30

5th speed rpm : 1200

travel mm : 9.20...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500
Del.quantity : 313.5...315.5
1000 : (310.5...318.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 14.00
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 275...425

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 15.00...15.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...11.00
2nd pressure hPa : 250
Rack travel in m: 11.10...11.30
3rd pressure hPa : 800
Rack travel in m: 14.00...14.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm3/ : 301.5...304.5
1000 s: (298.5...307.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 297.0...317.0
1000 s: (295.0...321.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
Edition : 27.11.92
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 087 470
Injection pump
Pump designation : PE6P110A320RS3080-1
EP type number : 0 411 816 734
Governor
Governor design. : RQV250...1025PA919-1
Governor no. : 9 420 080 334

Customer-spec. information
Customer : VOLVO

Engine : TD 102 T

1st version kW : 227.0
Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 18.0...18.3

100 s: (17.7...18.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 3.7...4.2

100 s: (3.4...4.5)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100
travel mm : 8.30...8.50

2nd speed rpm : 250
travel mm : 0.40...0.90

3rd speed rpm : 550
travel mm : 4.40...4.90

4th speed rpm : 800
travel mm : 6.30...6.70

5th speed rpm : 1180
travel mm : 9.60...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 1000

Del.quantity : 180.0...183.0

1000 : (177.5...185.5)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.20
Speed rpm : 1085...1095
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 61...69

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 300...440

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.40...10.60
2nd pressure hPa : 360
Rack travel in m: 11.20...11.30
3rd pressure hPa : 600
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm³/ : 168.5...174.5
1000 s: (166.5...176.5)
Aneroid pressure h: -
Speed rpm : 700

Del.quantity cm³/ : 128.5...131.5
1000 s: (126.0...134.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1085...1095

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...200.0
1000 s: (146.0...204.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.10...6.30
Del.quantity cm³/ : 37.5...42.5
1000 s: (34.5...45.5)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.00
Speed rpm : 980...990
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 12.00
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 60...68

Testing:

Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 90
Rack travel in m: 10.20...10.30 *
3rd pressure hPa : 600
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 163.0...165.0
1000 s: (160.0...168.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 270.0...310.0
1000 s: (266.0...314.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 17.5...22.5
1000 s: (14.5...25.5)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
Edition : 27.11.92
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 087 473
Injection pump
Pump designation : PE6P12DA32ORS3178-1
EP type number : 0 411 826 764
Governor
Governor design. : RQV250...950PA921-13
Governor no. : 0 421 813 796

Customer-spec. information
Customer : VOLVO-TRUCK

Engine : TD 122 FR

1st version kW : 300.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 25.9...26.1

100 s: (25.6...26.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.1

Del.quantity cm3/ : 1.7...2.2
100 s: (1.4...2.5)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.40

2nd speed rpm : 450
travel mm : 3.60...4.20

3rd speed rpm : 700
travel mm : 6.40...6.60

4th speed rpm : 985
travel mm : 8.20...8.40

5th speed rpm : 1060
travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 259.0...261.0
1000 : (256.0...264.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 13.20
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 61...69

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 120
Rack travel in m: 10.40...10.50
3rd pressure hPa : 875
Rack travel in m: 13.80...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 163.0...165.0
1000 s: (160.0...168.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack : 13.20
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 270.0...310.0
1000 s: (266.0...314.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.10
Del.quantity cm³/ : 17.5...22.5
1000 s: (14.5...25.5)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 23.10.92
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 230 072

Injection pump
Pump designation : PES6A100D41ORS2676
EP type number : 9 410 230 023
Governor
Governor design. : RSV400...1100A2C2086
-1L
Governor no. : 9 420 234 161

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466T

1st version kW : 132.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 32...34

Prestroke mm : 2.45...2.55
: (2.40...2.60)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 9.30

Speed rpm : 1145...1155

2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.8

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.20...5.40

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.30...10.40
2nd speed rpm : 750
Rack travel in m: 11.70...11.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 215
Rack travel in m: 11.30...11.40
3rd pressure hPa : 65
Rack travel in m: 9.90...10.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 126.0...130.0
1000 s: (124.0...132.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 87.0...91.0
1000 s: (85.0...93.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (185.0...215.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE18160

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Start-of-delivery mark = 15.5° after
start of delivery cyl. 1.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 03.12.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE3/10F1500L483
Type number : 0 460 403 016
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 394 H

Power KW: 39

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 127.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Setting value mm: 2.50...2.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1200
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Dispersion cm3/: 3.5
1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 1200
Del. quantity cm3/
1000S.: 44.00...45.00

Shutoff
electromagnet Volt: 12.0
Dispersion cm3/: 3.5
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 460
Del. quantity cm3/
1000S.: 10.50...14.50

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1620
Del. quantity cm3/
1000S.: 21.00...27.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...100.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1200
Inj.-qty. cm3/
difference 1000S.: 15.00...17.00 #
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1200

Supply pump
pressure difference bar: 0.10...0.30 #
Shutoff
electromagnet Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
TD travel mm: 3.60...4.40
mm: (3.30...4.70)

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1200
TD travel mm: 2.50...2.90
mm: (2.00...3.40)

Shutoff
electromagnet Volt: 12

4th speed 1/min: 1000
TD travel mm: 1.30...2.10
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

2nd speed 1/min: 600
Supply-pump pressure bar: 2.80...3.40
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1200
Supply-pump pressure bar: 5.30...5.90
Shutoff
electromagnet Volt: 12

4th speed 1/min: 1500
Supply-pump pressure bar: 6.60...7.20
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12

Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 1500
Shutoff
electromagnet Volt: 12

Overflow : 55.50...138.80
quantity cm³/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1700
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 1620
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 21.00...27.00
1000S.: (18.00...30.00)

8th speed 1/min: 1550
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 37.00...47.00
1000S.: (36.00...48.00)

9th speed 1/min: 1500
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 43.50...46.50
1000S.: (42.00...48.00)

12th speed 1/min: 1200
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 44.00...45.00
1000S.: (42.00...47.00)

20th speed 1/min: 600
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 45.50...48.50
1000S.: (44.00...50.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 460
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 10.50...14.50
1000S.: (8.50...16.50)

Dispersion cm³/: 3.5
1000S.: (3.5)

2nd speed 1/min: 650
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 550
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 2.00...8.00
1000S.: (1.00...9.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1200
Inj.-qty. cm³/ : 18.0...26.0 '
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1200
TD-travel : 0.80...1.00 '
difference mm: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...95.00
1000S.: (65.00...95.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...55.00
1000S.: (35.00...55.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...100.00
1000S.: (60.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.8...6.2
MS mm: 0.6...1.0
SVS max. mm: 2.8
Ya mm: 38.2 \pm 2
Yb mm: 55.5 \pm 4.1

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
Edition : 03.12.92
replaces : 09.07.92
Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L297-1
Type number : 0 460 404 056
Customer Part-No. :

Customer-specific information
Customer : OPEL

Engine : 2,3 YDT

Power KW: 74

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Indicator setting
Piston stroke mm: 1.0
Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

C24

Charge press. hPa: 1000
Setting value mm: 2.70...3.10
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 4.20...4.80
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 62.50...63.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 40.50...41.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 290
Del. quantity cm3/
1000S.: 13.50...17.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 15.00...21.00

KSB/AFB
valve Volt: 12

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Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 57,0...59,0
mind 1000S.: -

KSB/AFB
valve Volt: 12.0
Shutoff
electromagnet Volt: 12.0

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: -
Inj.-qty. cm³/
difference 1000S.: + 22.0...24.0 #
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1000
TD-travel
difference mm: + 1.2...1.4 #
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 8.30...9.10
mm: (8.00...9.40)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.70...3.10
mm: (2.20...3.60)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 1.30...2.10
mm: (1.00...2.40)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 5.50...6.10
mm: (5.10...6.50)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
9th speed 1/min: 300
Charge press. hPa: 1000
TD travel mm: 1.50...3.50 A
mm: (1.30...3.70)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
10th speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 3.60...6.00 B
mm: (3.00...6.60)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.90...7.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.20...4.80

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.70...4.30

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 300
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.20...4.80

KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12

 Overflow quantity at overflow valve:

 1st speed 1/min: 500
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 2150
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

 Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
 Charge-air pressure-setting
 point hPa: 500
 LDA-stroke mm: 6.5
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 55.50...56.50
 1000S.: (53.00...59.00)
 2nd speed 1/min: 2700
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...1.50
 1000S.: -
 5th speed 1/min: 2500
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 15.00...21.00
 1000S.: (14.00...22.00)
 8th speed 1/min: 2300
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 35.00...43.00
 1000S.: (33.00...45.00)
 9th speed 1/min: 2150
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 49.80...52.20
 1000S.: (48.70...53.30)
 12th speed 1/min: 1200
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 62.50...63.50
 1000S.: (60.70...65.30)
 16th speed 1/min: 800
 Charge press. hPa: 1000
 KSB solenoid-operated
 valve volt: 12
 Shutoff
 electromagnet volt: 12
 Del. quantity cm³/: 60.5...63.5
 17th speed 1/min: 800
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12.0
 Shutoff
 electromagnet volt: 12.0
 Del. quantity cm³/: 40.5...43.5
 1000H.: -
 18th speed 1/min: 500
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.50...41.50
 1000S.: (38.70...43.30)

 Mech. shutoff:

 Electr. shutoff:

 1st speed 1/min: 290
 Del. quantity cm³/: 0.00...3.00
 1000S.: -
 Shutoff
 electromagnet volt: -
 KSB/AFB
 valve Volt: -

 Idle delivery:

 1st speed 1/min: 290
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 13.50...17.50
 1000S.: (11.50...19.50)
 Dispersion cm³/: 3.0
 1000S.: (3.0)
 2nd speed 1/min: 380
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 320
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 7.00...13.00
 1000S.: (6.50...13.50)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1000
 Charge press. hPa: -
 Inj.-qty. cm³/: + 22,0..24,0#
 difference 1000S.: (20.0...26.0) #
 KSB/AFB
 valve Volt: 12.0
 Shutoff
 electromagnet Volt: 12.0
 2nd speed 1/min: 1000
 Charge press. hPa: -
 Inj.-qty. cm³/: + 2.0...8.0
 difference 1000S.: -
 KSB/AFB
 valve Volt: 12.0
 Shutoff
 electromagnet Volt: 12.0

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1000
 TD-travel : + 1.2...1.4 #
 difference mm: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 TD-travel : + 0.5...1.1

Automatic starting fuel delivery:

1st speed 1/min: 250
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 53.00...63.00
 1000S.: (50.00...66.00)

2nd speed 1/min: 400
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...50.00
 1000S.: (40.00...50.00)

3rd speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 57.00...59.00
 1000S.: (50.00...66.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: 3.2...3.4
 KF mm: 5.6...6.0
 MS mm: 0.8...1.2
 LDA stroke mm: 6.5
 Ya mm: 37.9...39.9
 Yb mm: 39.2...44.8

Remarks:

:
 :

* Correction at adjusting nut (46)

A = KSB adjustment point
 B = KSB curve point

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F
Edition : 07.12.92
replaces : 14.04.92
Calibrating oil : ISO-4113

Injection pump : VE4/10F2050R364
Type number : 0 460 404 066
Customer Part-No. :

Customer-specific information
Customer : S0FIM

Engine : 8140.67.2580

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.2
(from BDC): +0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 3.10...3.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.50...5.10
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 2000
Del. quantity cm3/
1000S.: 37.50...38.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 15.00...19.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm3/
1000S.: 14.00...21.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...100.00
mind 1000S.: 70.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Inj.-qty. cm3/
difference 1000S.: 18.50...19.50 #

Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)

1.Speed 1/min: 1000
Supply pump
pressure
difference bar: 0.10...0.30 #
Shutoff
electromagnet Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800
TD travel mm: 7.30...8.10
mm: (7.00...8.40)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
TD travel mm: 3.10...3.50
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
TD travel mm: 0.80...1.60
mm: (0.50...1.90)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2000
TD travel mm: 8.20...9.00
mm: (7.90...9.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000
Supply-pump
pressure bar: 7.00...7.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4.50...5.10

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Supply-pump
pressure bar: 3.50...4.10

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2330

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 14.00...20.00
1000S.: (13.00...21.00)

8th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.50...38.50
1000S.: (36.00...40.00)

12th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.5...38.5
1000S.: (34.5...39.5)

15th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.00...36.00
1000S.: (32.00...37.00)

17th speed 1/min: 500
Shutoff
electromagnet volt: 12
Del. quantity cm³/: 30.00...37.00
1000H.: (29.50...37.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...19.00
1000S.: (12.00...22.00)

Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 465
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...2.00
1000S.: (0.00...2.00)

3rd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1000
Inj.-qty. cm3/ : 19.0...21.0 #
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Inj.-qty. cm3/ : 18.0...24.0 '
difference 1000s.: (17.0...25.0) '
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Inj.-qty. cm3/ : + 4.0...6.0 "
difference 1000s.: -
Shutoff
electromagnet Volt: 12.0

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1000
TD-travel : 0.40...0.60 '
difference mm: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
TD-travel : 0.8...1.8 "
Shutoff
electromagnet Volt: 12.0

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1000
Supply pump-
pressure : 0.10...0.30 #
difference bar: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/ : 48.00...68.00
1000s.: (48.00...68.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/ : 27.00...37.00
1000s.: (27.00...37.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/ : 70.00...100.00
1000s.: (70.00...100.00)

Shutoff electromagnet:

002

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.6...6.0
MS mm: 1.6...2.0
SVS max. mm: 1.9
Ya mm: 37.9...39.9
Yb mm: 40.9...46.5

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 03.12.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L414
Type number : 0 460 404 068
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 425 CLI

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 45.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.40...1.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

D03

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 65.50...66.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 43.00...44.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 40.00...46.00

Shutoff
electromagnet Volt: 12.0

Start:

Speed 1/min: 100
Del. quantity cm3/: 45.00...75.00
mind 1000S.: 45.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: 1000
Inj.-qty. cm3/
difference 1000S.: 25.0...27.0 #

Shutoff
 electromagnet Volt: 12.0
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1500
 Charge press hPa: 1000
 Supply pump
 pressure
 difference bar: 0.10...0.30 #
 Shutoff
 electromagnet Volt: 12.0

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
 Charge press hPa: 1000
 TD travel mm: 3.40...4.20
 mm: (3.10...4.50)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1000
 Charge press hPa: 1000
 TD travel mm: 1.40...1.80
 mm: (0.90...2.30)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 700
 Charge press hPa: 1000
 TD travel mm: 0.20...1.00
 mm: (0.00...1.30)

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 2100
 Charge press. hPa: 1000
 TD travel mm: 6.10...6.90
 mm: (5.80...7.20)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7.20...7.80
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4.20...4.80
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 700
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 3.20...3.80

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
 Charge-air pressure-setting
 point hPa: 350
 LDA-stroke mm: 7.1
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 55.50...56.50
 1000s.: (53.50...58.50)

3rd speed 1/min: 2500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...8.00
 1000s.: (0.00...8.00)

5th speed 1/min: 2300
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...46.00
 1000s.: (39.00...47.00)

9th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 63.00...66.00
 1000s.: (61.50...67.50)

12th speed 1/min: 1500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quynntity cm³/: 65.50...66.50
 1000s.: (64.0...68.0)

18th speed 1/min: 700
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 43.00...44.00
 1000s.: (41.00...46.00)

20th speed 1/min: 700

Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.50...68.50
1000S.: (64.00...70.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...7.50
1000S.: (2.00...8.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

2nd speed 1/min: 1500
Charge press. hPa: 1000
Inj.-qty. cm³/: 25.0...27.0 #
difference 1000S.: -

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1500
Charge press. hPa: 1000
Inj.-qty. cm³/: 28.0...34.0 '
difference 1000S.: -

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 1000
TD-travel : 0.50...0.70 '
difference mm: -
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):

005

1st speed 1/min: 1500
Supply pump-
pressure : 0.10...0.30 #
difference bar: -
Shutoff
electromagnet Volt: 12.0

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.50...44.50
1000S.: (41.00...46.00)

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: 5,2...5,6
MS mm: 0,6...1,0
LDA stroke mm: 7,1
Ya mm: 38.8...40.8
Yb mm: 37.2...46.8

Ajustement Potentiometer:

Supply voltage
pot. volt: 5.0
Output volt
pot. volt: 2.31

Remarks:

:
:

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
Edition : 03.12.92
replaces : 13.02.91
Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L297-4
Type number : 0 460 404 071
Customer Part-No. :

Customer-specific information
Customer : OPEL

Engine : 2,3 DTR-MT

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 5.10...5.50
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

D07

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 5.40...6.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 62.50...63.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 40.50...41.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 290
Del. quantity cm3/
1000S.: 13.50...17.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 15.00...21.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100

11

Charge press hPa: -
Del. quantity cm³/: 57.0...59.0
mind 1000S.: 57.0

KSB/AFB

Valve Volt: 12

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1500

Charge press hPa: -

Inj.-qty. cm³/
difference 1000S.: - 6.0...8.0 #

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

SP press.-dif.measurement

pompa di mandata (FP)

1.Speed 1/min: 1500

Charge press hPa: -

Supply pump

pressure

difference bar: - 0.1...0.3 #

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100

Charge press hPa: 1000

TD travel mm: 7.80...8.60
mm: (7.50...8.90)

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

3rd speed 1/min: 1500

Charge press hPa: 1000

TD travel mm: 5.10...5.50
mm: (4.60...6.00)

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

4th speed 1/min: 800

Charge press hPa: 1000

TD travel mm: 1.10...1.90
mm: (0.80...2.20)

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

5th speed 1/min: 1200

Charge press. hPa: 1000

TD travel mm: 3.50...4.10
mm: (3.10...4.50)

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

9th speed 1/min: 300

Charge press. hPa: 1000

TD travel mm: 1.50...3.50 A
mm: (1.30...3.70)

KSB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12

10th speed 1/min: 800

Charge press hPa: 1000

TD travel mm: 3.50...5.90 B
mm: (2.90...6.50)

KSB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100

Charge press. hPa: 1000

Supply-pump pressure bar: 6.90...7.50

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

2nd speed 1/min: 1500

Charge press. hPa: 1000

Supply-pump pressure bar: 5.40...6.00

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

3rd speed 1/min: 1200

Charge press. hPa: 1000

Supply-pump pressure bar: 4.60...5.20

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

4th speed 1/min: 300

Charge press. hPa: 1000

Supply-pump pressure bar: 4.20...4.80

KSB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2150
Charge press. hPa: 1000
KSB/AFB
valve Volt: 120
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800*
Charge-air pressure-setting
point hPa: 500
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.50...56.50
1000S.: (53.00...59.00)
2nd speed 1/min: 2700
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 2500
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...21.00
1000S.: (14.00...22.00)
8th speed 1/min: 2300
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.00...44.00
1000S.: -
9th speed 1/min: 2150
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 50.30...52.70
1000S.: (49.20...53.80)
12th speed 1/min: 1200
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 62.50...63.50
1000S.: (60.70...65.30)
16th speed 1/min: 800
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12
Shutoff
electromagnet volt: 12
Del. quantity cm³/: 60.5...63.50
1000H.: -
17th speed 1/min: 800
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12
Shutoff
electromagnet volt: 12
Del. quantity cm³/: 40.5...43.5
1000H.: -
18th speed 1/min: 500
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.50...41.50
1000S.: (38.70...43.30)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 290
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 290
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.50...17.50
1000S.: (11.50...19.50)
Dispersion cm³/: 3.0
1000S.: (3.0)
2nd speed 1/min: 380
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 320
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 7.00...13.00
 1000S.: (6.50...13.50)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1500
 Inj.-qty. cm³/ : - 6.0...8.0 #
 difference 1000S.: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1500
 Inj.-qty. cm³/: - 10.0...18.0'
 difference 1000S.: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1500
 TD-travel : - 0.2...0.4 #
 difference mm: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

SP press.-dif.measurement:
 pompa di mandata (FP):
 1st speed 1/min: 1500
 Supply pump-
 pressure : - 0.1...0.3 '
 difference bar: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 250
 KSB/AFB
 valve Volt: 12
 Timing valve Volt: 12

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 55.00...65.00
 1000S.: (55.00...65.00)

2nd speed 1/min: 400
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...50.00
 1000S.: (40.00...50.00)

3rd speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 57.00...59.00
 1000S.: (50.00...66.00)

Mounting and assembly dimensions:

Designation
 K mm: 3.2...3.4
 KF mm: 5.6...6.0
 MS mm: 0.9...1.3
 LDA stroke mm: 6.5
 Ya mm: 20.5...22.5
 Yb mm: 59.9...73.9

Remarks:

:
 :
 :

* Correction at adjusting nut (46)

Operate control lever after each
 manifold-pressure compensator pressure
 change.

A = KSB adjustment point
 B = KSB curve point

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
Edition : 08.12.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/10F1350R418-1
Type number : 0 460 404 072
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0824 GF 02

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.55
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 2.70...3.10
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 78.5...79.5
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 7.00...13.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1420
Del. quantity cm3/
1000S.: 59.50...65.50
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...80.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200
TD travel mm: 4.70...5.50
mm: (4.40...5.80)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
TD travel mm: 2.70...3.10
mm: (2.20...3.60)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 800

TD travel mm: 0.30...1.10
mm: (0.00...1.40)

Shutoff
electromagnet Volt: 24
5th speed 1/min: 1350
TD travel mm: 5.30...6.10
mm: (5.30...6.10)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3.10...3.70
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5.30...5.90
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1350
Supply-pump
pressure bar: 7.50...8.10
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1350
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 1530
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...15.00
1000S.: (0.00...15.00)
4th speed 1/min: 1480
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 15.00...45.00
1000S.: -
5th speed 1/min: 1420
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 59.50...65.50
1000S.: (58.00...67.00)
9th speed 1/min: 1350

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 78.50...81.50
1000S.: (77.00...83.00)
12th speed 1/min: 1000
Shutoff
electromagnet Volt: 24
Del. quynity cm³/: 78.50...79.50
1000S.: (76.50...81.5)
15th speed 1/min: 800
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 74.00...80.00
1000S.: (73.00...81.00)
20th speed 1/min: 600
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 53.00...59.00
1000S.: (52.00...60.00)

Mech. shutoff: Mech. Abststellung:

1st speed 1/min: 1300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 7.00...13.00
1000S.: (5.00...15.00)

Dispersion cm³/: 6.0
1000S.: (6.5)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 55.00...105.00
1000S.: (55.00...105.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 40.00...70.00
1000s.: (40.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 40.00...80.00
1000s.: (40.00...80.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.3...5.7
MS	mm: -
SVS max.	mm: 3.7

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 03.12.92
replaces : 10.03.92
Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L414-1
Type number : 0 460 404 073
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 425 CLIRS

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.20...1.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 4.70...5.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 65.00...66.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 43.00...44.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 40.00...46.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 45.00...75.00
mind 1000S.: 45.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: - 7.00...9.00 #

Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1500
Supply pump
pressure
difference bar: -0.10..0.30 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.20...1.60
mm: (0.70...2.10)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 4.00...4.80
mm: (3.70...5.10)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.60...8.20

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.70...5.30

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 700
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.80...4.40
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
Charge press. hPa: 1000

D15

Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 7.0
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 54.00...55.00
1000S.: (52.00...57.00)

3rd speed 1/min: 2500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...8.00
1000S.: (0.00...8.00)

5th speed 1/min: 2300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...46.00
1000S.: (39.00...47.00)

9th speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 61.50...64.50
1000S.: (60.00...66.00)

12th speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quynity cm³/: 65.00...66.00
1000S.: (63.50...67.50)

18th speed 1/min: 700
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 43.00...44.00
1000S.: (41.00...46.00)

20th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...68.00
1000S.: (63.50...69.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 1.50...6.50
1000S.: (1.00...7.00)

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Inj.-qty. cm³/: - 13.0...19.0'
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : - 1.4...1.6 '
difference mm: -
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.50...44.50
1000S.: (41.00...46.00)

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.2...5.6
MS mm: 0.6...1.0
SVS max. mm: 4.3
LDA stroke mm: 7.0

Ajustement Potentiometer:

Supply voltage
pot. volt: 5.0
Output volt
pot. volt: 2.31

Remarks:

:
:
* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
Edition : 03.12.92
replaces : 09.12.92
Calibrating oil : ISO-4113

Injection pump : VE4/10F1350R418-2
Type number : 0 460 404 076
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0824 GF 03

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): $\pm 0.02(0.04)$

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 2.20...2.60
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 6.40...7.00
Shutoff
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000S.: 78.00...79.00
Shutoff
electromagnet Volt: 24
Dispersion cm³/
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 7.00...13.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³/
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1420
Del. quantity cm³/
1000S.: 58.00...62.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/
mind 1000S.: 57.0
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200
TD travel mm: 4.30...5.10
mm: (4.00...5.40)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
TD travel mm: 2.20...2.60
mm: (1.70...3.10)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 900

TD travel mm: 1.00...1.80
mm: (0.70...2.10)

Shutoff
electromagnet Volt: 24
5th speed 1/min: 1350
TD travel mm: 6.00...6.80
mm: -

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 4.40...5.00
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Supply-pump
pressure bar: 6.40...7.00
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1200
Supply-pump
pressure bar: 7.40...8.00
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1350
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1550
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1510
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...15.00
1000S.: (0.00...15.00)
4th speed 1/min: 1460
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 15.00...45.00
1000S.: (15.00...45.00)
5th speed 1/min: 1420

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 58.00...62.00
1000S.: (53.50...66.50)
9th speed 1/min: 1350

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 77.70...80.70
1000S.: (76.20...82.20)
12th speed 1/min: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 78.00...79.00
1000S.: (76.00...81.00)
15th speed 1/min: 800

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 79.00...83.00
1000S.: (77.50...84.50)
20th speed 1/min: 600

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 65.00...71.00
1000S.: (64.00...72.00)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 7.00...13.00
1000S.: (4.50...15.50)

Dispersion cm³/: 3.5
1000S.: (3.5)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 350

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 65.00...105.00
1000S.: (65.00...105.00)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

3rd speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 54.00...66.00
1000S.: MAX.57.0

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 0.8

Remarks:

:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 09.12.92
replaces : 14.04.92
Calibrating oil : ISO-4113

Injection pump : VE4/12F1350R407
Type number : 0 460 424 075
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8040.25.4000 TC

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.40...1.80

Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 79.00...80.00

Shutoff
electromagnet Volt: 24
Dispersion cm3/: 3.5
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 45.50...46.50

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 3.5
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1525
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 30.00...36.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...110.00
mind 1000S.: 60.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 Charge press. hPa: 1000
 TD travel mm: 2.20...3.00
 mm: (1.70...3.50)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1000
 Charge press. hPa: 1000
 TD travel mm: 1.40...1.80
 mm: (0.70...2.50)
 5th speed 1/min: 1350
 Charge press. hPa: 1000
 TD travel mm: 3.70...4.50
 mm: (3.20...5.00)

Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3.70...4.30
 Shutoff

electromagnet Volt: 24
 2nd speed 1/min: 1000
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.70...6.30
 Shutoff

electromagnet Volt: 24
 3rd speed 1/min: 1350
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7.50...8.10
 Shutoff
 electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600*

Charge-air pressure-setting
 point hPa: 375
 LDA-stroke mm: 6,7

Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 64.00...65.00
 1000s.: (60.50...68.50)

2nd speed 1/min: 1600
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)

5th speed 1/min: 1525
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 30.00...36.00
 1000s.: (27.00...39.00)

8th speed 1/min: 1475
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 43.00...51.00
 1000s.: (41.00...53.00)

9th speed 1/min: 1350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 69.50...72.50
 1000s.: (67.50...74.50)

10th speed 1/min: 1200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 72.00...76.00
 1000s.: (70.50...77.50)

12th speed 1/min: 700
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 79.00...80.00
 1000s.: (76.00...83.00)

18th speed 1/min: 600
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 45.50...46.50
 1000s.: (42.50...49.50)

20th speed 1/min: 600
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 82.50...86.50
 1000s.: (81.00...88.00)

21th speed 1/min: 500
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 44.00...48.00
1000S.: (42.00...50.00)

Mech. shutoff:
Mech. Abst.ellung:

1st speed 1/min: 1350
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: -

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000S.: -

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 3.5
1000S.: (5.0)

2nd speed 1/min: 475
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 45.00...65.00
1000S.: (45.00...65.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm: 3,7
KF mm: K-OT
MS mm: 0,7...1,1
LDA stroke mm: 6,7

Operate control lever after each
manifold-pressure compensator pressure
change. :

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
Edition : 09.12.92
replaces : 09.11.88
Calibrating oil : ISO 4113

Injection pump : VE6/12F1300R307
Type number : 0 460 426 112

Customer-specific information
Customer : MAN

Engine : D0826TF

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172...175

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): $\pm 0.02(0.04)$

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 2.8...3.2

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 8.1...8.7

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 120.5...121.5
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 88.5...89.5

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 26.0...34.0
Del. quantity cm³/: 3.5
1000S.: (4.5)

Full-load speed regulation

Speed 1/min: 1350
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 107.0...113.0

Start:

Speed 1/min: 100
Charge press hPa: -
Del. quantity cm³/: -
mind 1000S.: 70.0

Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 1000
Inj.-qty. cm³/
difference 1000S.: - 11.0...13.0 #
SP press.-dif.measurement
pompa di mandata (FP) #
1.Speed 1/min: 1000
Charge press hPa: 1000
Supply pump
pressure
difference bar: - 0.1...0.3 #

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
 Charge press hPa: 1000
 TD travel mm: 2.8...3.2
 mm: (2.3...3.7)
 2nd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 3.5...4.3
 mm: (3.2...4.6)
 3rd speed 1/min: 900
 Charge press hPa: 1000
 TD travel mm: 1.5...2.3
 mm: (1.2...2.6)

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.8...6.4
 2nd speed 1/min: 1000
 Charge press. hPa: 1000
 Supply-pump pressure bar: 8.1...8.7
 3rd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump pressure bar: 8.5...9.1

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: -
 Overflow : 41...83
 quantity cm³/10s: (26...98)
 2nd speed 1/min: 1300
 Charge press. hPa: 1000
 Overflow : 55...138
 quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600*
 Charge-air pressure-setting point hPa: 300
 LDA-stroke mm: 7.6
 Del. quantity cm³/: 104.5...105.5
 1000S.: (102.5...107.5)
 2nd speed 1/min: 1520
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.0
 1000S.: -
 3rd speed 1/min: 1480
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...15.0
 1000S.: -

4th speed 1/min: 1430
 Charge press. hPa: 1000
 Del. quantity cm³/: 15.0...55.00
 1000S.: -
 5th speed 1/min: 1350
 Charge press. hPa: 1000
 Del. quantity cm³/: 107.0...113.0
 1000S.: (105.5...114.5)
 6th speed 1/min: 1300
 Charge press. hPa: 1000
 Del. quantity cm³/: 116.5...121.5
 1000S.: (115.0...123.0)
 7th speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/: 120.5...121.5
 1000S.: (118.5...123.5)
 8th speed 1/min: 800
 Charge press. hPa: 1000
 Del. quantity cm³/: 120.5...125.5
 1000S.: (119.0...127.0)
 9th speed 1/min: 600
 Charge press. hPa: 1000
 Del. quantity cm³/: 118.5...127.6
 1000S.: (117.0...129.0)
 10th speed 1/min: 600
 Charge press. hPa: -
 Del. quantity cm³/: 88.5...89.5
 1000S.: (86.5...91.5)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1300
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.00
 1000S.: -

Idle delivery:

1st speed 1/min: 300
 Del. quantity cm³/: 26.5...33.5
 1000S.: (24.5...35.5)
 2nd speed 1/min: 400
 Del. quantity cm³/: 0.00...3.00
 1000S.: -
 3rd speed 1/min: 350
 Del. quantity cm³/: 3.00...12.00
 1000S.: (1.50...13.5)

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1st speed 1/min: 1000
 Charge press. hPa: 1000
 Inj.-qty. cm³/: - 39.5...47.5
 difference 1000S.: -
 2nd speed 1/min: 1000
 Charge press. hPa: 1000
 Inj.-qty. cm³/: + 2.0...8.0
 difference 1000S.: -

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : - 0.8...1.0 '
difference mm: -
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : + 0.1...0.9 "
difference mm: -

Automatic starting fuel delivery:

1st speed 1/min: 100
Del. quantity cm³/: 70.00...130.00
1000S.: -

2nd speed 1/min: 350
Del. quantity cm³/: 55.00...95.00
1000S.: -

3rd speed 1/min: 450
Del. quantity cm³/: 95.0...135.0
1000S.: -

Mounting and assembly dimensions:

Designation

K	mm: -
MS	mm: 0.6...1.0
SVS max.	mm: 0.6
LDA stroke	mm: 7.6

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 03.12.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R458
Type number : 0 460 484 048
Customer Part-No. :

Customer-specific information
Customer : RENAULT

Engine : F8Q - 730

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.20...3.60
AFB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.40...5.00
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 31.6...32.6

KSB/AFB 11
valve Volt: -
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2,5
1000S.: (3,0)

Low-idle speed regulation

Speed 1/min: 410
Del. quantity cm3/
1000S.: 7.5...11.5

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2,5
1000S.: (2,5)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 1.00...5.00

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450
Del. quantity cm3/
1000S.: 25.50...31.50

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00
KSB/AFB
Valve Volt: -

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: -10.5...12.5 #
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250
Supply pump
pressure
difference bar: - 0.1...0.3 #
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 5.80...6.60
mm: (5.50...6.90)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.20...3.60
mm: (2.70...4.10)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
TD travel mm: 1.10...1.90
mm: (0.80...2.20)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
8th speed 1/min: 310
TD travel mm: 1.00...3.20 A
mm: -

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
9th speed 1/min: 500
TD travel mm: 2.20...4.60 B
mm: -

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
Supply-pump
pressure bar: 3.10...3.70
KSB/AFB
valve Volt: -

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 4.40...5.00
KSB/AFB
valve Volt: -

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.30...6.90
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 2250
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2950
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...5.00
1000S.: (0.00...5.00)
3rd speed 1/min: 2650
KSB/AFB
valve Volt: -

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.50...18.50
 1000S.: (9.50...19.50)
 5th speed 1/min: 2450
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 25.50...31.50
 1000S.: (24.50...32.50)
 9th speed 1/min: 2250
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 33.00...35.00
 1000S.: (31.70...36.30)
 10th speed 1/min: 2000
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 32.50...34.50
 1000S.: (31.20...35.30)
 11th speed 1/min: 1625
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 30.10...33.10
 1000S.: (29.30...33.90)
 12th speed 1/min: 1250
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 31.60...32.60
 1000S.: (29.80...34.40)
 20th speed 1/min: 750
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 30.20...33.20
 1000S.: (29.40...34.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 410
 Del. quantity cm³/: 0.00...3.00
 1000S.: MAX.5.0 STREU.

Shutoff
 electromagnet volt: -
 KSB/AFB
 valve Volt: -

Damper set qty.:

LFG-setting:
 solidale con carcassa:
 Idle delivery:

1st speed 1/min: 410
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 7.50...11.50
 1000S.: (5.50...13.50)

High Idle:

1st speed 1/min: 500
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 7.00...11.00
 1000S.: (5.00...13.00)

Residual:

1.Rotacao 1/min: 500
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 1.00...5.00
 1000S.: (1.00...5.00)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1250
 Inj.-qty. cm³/ : - 13.2..17.2'
 difference 1000S.: -
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250
 Inj.-qty. cm³/: + 2.00..8.00"
 difference 1000S.: -
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1250
 TD-travel : - 0.4...0.6 '
 difference mm: -
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12

2nd speed 1/min: 1250
TD-travel : - 0.2...0.8 "
difference mm: -
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

2nd speed 1/min: 310
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...45.00
1000S.: (15.00...45.00)

4th speed 1/min: 100
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.5
MS mm: 1.2...1.4
SVS max. mm: 1.5

Remarks:

:
:

A = KSB adjustment point
B = KSB curve point

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,9 K2
Edition : 09.12.92
replaces : 06.12.91
Calibrating oil : ISO 4113

Injection pump : VE4/8F2300R464
Type number : 0 460 484 052

Customer-specific information
Customer : FIAT TIPO/TEMPRA

Engine : M 705

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 5,9...6,3
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 5,6...6,2

E02

Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del. quantity cm³/
1000S.: 32.00...33.00

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2,5
1000S.: -

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm³/
1000S.: 8,0...12,0

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2,5
1000S.: -

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm³/
1000S.: 20,0...26,0

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: -
mind 1000S.: 37,0

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Inj.-qty. cm³/
difference 1000S.: - 6,0...8.00 #

Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)

1.Speed 1/min: 1500
Supply pump
pressure
difference bar: - 0.1...0.3 #

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 1,7...2,5
mm: (1,4...2,8)
electromagnet Volt: 12
2nd speed 1/min: 1500
TD travel mm: 5,9...6,3
mm: (5,4...6,8)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
TD travel mm: 8,6...9,4
mm: (8,3...9,7)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 2300
TD travel mm: 9,4...10,2
mm: (9,1...10,5)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 3,0...3,6
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Supply-pump pressure bar: 5,6...6,2
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2300
Supply-pump pressure bar: 7,8...8,4
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41,6...83,3
quantity cm³/10s: (26,6...98,3)
2nd speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Overflow : 55,5...138,8
quantity cm³/10s: (40,5...153,8)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0,0...1,6
1000S.: -

2nd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2,0...10,0
1000S.: -
3rd speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20,0...26,0
1000S.: (19,0...27,0)

4th speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32,8...35,2
1000S.: (31,7...36,3)

5th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32,3...34,7
1000S.: (31,2...35,8)

6th speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32,0...33,0
1000S.: (30,2...34,8)

7th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33,0...36,0
1000S.: (31,5...37,5)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 390
Del. quantity cm³/: 0,0...3,0
1000S.: -
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8,0...12,0
1000S.: (5,0...15,0)
2nd speed 1/min: 650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0,0...3,0
1000S.: -

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Inj.-qty. cm³/: - 5,0...13,0'
difference 1000S.: -

Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500

TD-travel : - 1.0...1.2 '
difference mm: -

Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40,0...60,00
1000s.: -

2nd speed 1/min: 400

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33,00...43,00
1000s.: -

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm: 3,2...3,4
KF	mm: 5,3...5,7
MS	mm: 1,3...1,7
XK	mm: 17,0...19,0
XL	mm: 10,5...13,9

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
Edition : 03.12.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R487
Type number : 0 450 494 330
Customer Part-No. :

Customer-specific information
Customer : OPEL

Engine : 1,7 YD mit EGR

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 638 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 2.00...2.40
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.00...4.60
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Dispersion cm³/: 2.5
1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 1300
Del. quantity cm³/
1000S.: 32.00...33.00

KSB/AFB 11
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2,5
1000S.: (2,5)

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm³/
1000S.: 8.00...10.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 525
Del. quantity cm³/
1000S.: 3.50...4.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2735
Del. quantity cm³/
1000S.: 7.00...11.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm³/: 28.00...44.00
mind 1000S.: 28.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Inj.-qty. cm³/
difference 1000S.: - 8.00...10.0 #
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1000
Supply pump
pressure
difference bar: - 0.1...0.3 #
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1000
TD travel mm: 2.00...2.40
mm: (1.50...2.90)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.90...1.70
mm: (0.60...2.00)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
5th speed 1/min: 2300
TD travel mm: 7.50...8.30
mm: (7.20...8.60)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
9th speed 1/min: 300
TD travel mm: 0.80...3.20 A
mm: (0.80...3.20)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
10th speed 1/min: 800
TD travel mm: 1.90...4.30 B
mm: (1.90...4.30)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2300
Supply-pump
pressure bar: 7.60...8.20

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4.00...4.60

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Supply-pump
pressure bar: 3.40...4.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2300
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

5th speed 1/min: 2735
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Del. quantity cm3/: 7.00...11.00
 1000S.: (5.00...13.00)
 8th speed 1/min: 2575
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 17.00...23.00
 1000S.: -
 9th speed 1/min: 2300
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 27.20...29.80
 1000S.: (26.20...30.80)
 10th speed 1/min: 2000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 28.00...31.00
 1000S.: (27.20...31.80)
 12th speed 1/min: 1300
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 32.00...33.00
 1000S.: (30.20...34.80)
 20th speed 1/min: 700
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 25.40...28.40
 1000S.: (23.90...29.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -

Damper set qty.:

LFG-setting:
 solidale con carcassa:
 Idle delivery:

1st speed 1/min: 450
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Del. quantity cm3/: 8.00...10.00
 1000S.: (5.50...12.50)

High Idle:

1st speed 1/mi: 550
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 8.00...10.00
 1000S.: (5.50...12.50)

Residual:

1.Rotacao 1/min: 525
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 3.50...4.50
 1000S.: (2.00...6.00)
 2nd speed 1/min: 750
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...1.60
 1000S.: -

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1000
 Inj.-qty. cm3/ : - 11.0...19.0'
 difference 1000S.: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1000
 TD-travel : - 0.6...0.8 '
 difference mm: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
 terza fermo della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 Spacing mm: 12.0

1st speed 1/min: 1000

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 21.40...23.40
1000S.: (19.90...24.90)

Automatic starting fuel delivery:

1st speed 1/min: 400
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...35.00
1000S.: (25.00...35.00)

2nd speed 1/min: 550
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 22.50...32.50
1000S.: (22.50...32.50)

3rd speed 1/min: 100
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.00...44.00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 1.3...1.7

Remarks:

:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 14.10.91
 Test oil : ISO-4113
 Combination no. : 0 400 074 087
 Injection pump
 Pump designation : PES4M55C320RS175
 EP type number : 0 410 054 957
 Governor
 Governor design. : RSV350...1650MOC353-7
 Governor no. : 0 420 033 043

Customer-spec. information
 Customer : MB-NFZ

Engine : OM601 (2,3L)

1st version kW : 51.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1630
 Rack travel in mm : 12.10...12.20
 Del.quantity cm3/ : 4.0...4.1
 100 s: (3.9...4.2)
 Spread cm3 : 0.2
 100 s: (0.3)

2nd speed rpm : 350.0
 Rack travel in mm : 5.3...5.5
 Del.quantity cm3/ : 0.5...0.7
 100 s: (0.4...0.9)
 Spread cm3 : 0.1
 100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1630
 Del.quantity : 40.0...41.0
 1000 : (39.0...42.0)
 Spread cm3 : 2.50
 1000 : (3.00)

RATED SPEED

1st version
 Control lever
 position degrees: 109...117

Testing:
 1st rack travel in: 11.2
 Speed rpm : 1670...1680
 2nd rack travel in: 4.00
 Speed rpm : 1775...1793
 4th rack travel in: 2000
 Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 72...80

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.4

Testing:

Speed rpm : 100

Minimum rack travel: 20.10

Speed rpm : 350

Rack travel in mm : 5.30...5.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1630

Rack travel in mm: 12.10...12.20

2nd speed rpm : 1000

Rack travel in mm: 12.60...12.80

3rd speed rpm : 1400

Rack travel in mm: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000

Del. quantity cm³/ : 38.5...40.0

1000 s: (37.5...41.0)

Spread cm³ : 2.50

1000 s: (3.0)

Speed rpm : 1400

Del. quantity cm³/ : 38.5...40.5

1000 s: (37.5...41.5)

Spread cm³ : 2.50

1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm³/ : 52.0...0.0

1000 s: (52.0...0.0)

Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.30...5.50

Del. quantity cm³/ : 5.0...7.0

1000 s: (4.5...9.0)

Spread cm³ : 1.00

1000 s: (1.50)

Remarks:

:

Start-of-delivery sensor system:
adjustment and blocking with device

KDEP 1077 = 15.3°...15.7°

(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 27.11.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 074 090
Injection pump
Pump designation : PES4M55C320RS175
EP type number : 0 410 054 957
Governor
Governor design. : RSV350...1650MUC353-
13
Governor no. : 0 420 033 050

Customer-spec. information
Customer : MB-NFZ

Engine : OM601 (2,3L)

1st version kW : 50.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1630

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 3.9...4.0

100 s: (3.8...4.1)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 0.6...0.8

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1630

Del.quantity : 39.0...40.0

1000 : (38.0...41.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 10.9

Speed rpm : 1685...1695

2nd rack travel in: 4.00

Speed rpm : 1766...1784

4th rack travel in: 2000

Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever

position degrees: 66...74

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.4

Testing:

Speed rpm : 100

Minimum rack travel: 20.10

Speed rpm : 350

Rack travel in mm : 5.30...5.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1630

Rack travel in m: 11.80...11.90

2nd speed rpm : 1000

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version:

Speed rpm : 1000

Del.quantity cm³/ : 37.0...39.0

1000 s: (36.0...40.0)

Spread cm³ : 2.50

1000 s: (3.0)

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 54.0...0.0

1000 s: (54.0...0.0)

Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.30...5.50

Del.quantity cm³/ : 6.0...8.0

1000 s: (5.5...10.0)

Spread cm³ : 1.00

1000 s: (1.50)

Remarks:

:

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = 15.3°...15.7°

(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 11.01.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 074 886

Injection pump
Pump designation : PES4M55C320RS167
EP type number : 0 410 054 960
Governor
Governor design. : RSF375/2000M55-7
Governor no. : 0 420 021 268

Customer-spec. information
Customer : MB-PKW

Engine : OM601-2.3L

1st version kW : 59.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

E13

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del. quantity cm3/ : 3.8...3.9

100 s: (3.7...4.0)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 5.1...5.3

Del. quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 38.0...39.0

1000 : (37.0...40.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.00...7.50

Speed rpm : 2200

4th rack travel in: 2500

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,40...1,50

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 375

Testing:

SET IDLE AUXILIARY SPRING

TORQUE CONTROL

FUEL DELIVERY CHARACTERISTICS

STARTING FUEL DELIVERY

1st version

E14

TESTING PNEUMATIC SHUTOFF DEVICE

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 18.12.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 074 888

Injection pump
Pump designation : PES4M55C320RS183
EP type number : 0 410 054 955
Governor
Governor design. : RSF375/2300M55-12
Governor no. : 0 420 021 169

Customer-spec. information
Customer : MB-PKW

Engine : OM601-ECE(W202)

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.90...13.00

Del.quantity cm³/ : 3.6...3.7

100 s: (3.5...3.8)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.7...6.9

Del.quantity cm³/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 36.0...37.0

1000 : (35.0...38.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.8...9.2

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: -

Setting point w/out bumper spring

starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 23.10.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 074 889

Injection pump
Pump designation : PES4M55C320RS172
EP type number : 0 410 054 958
Governor
Governor design. : RSF375/2300M75-2
Governor no. : 0 420 021 166

Customer-spec. information
Customer : MB-PKW

Engine : OM601-Mopf II

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 3.3...3.4

100 s: (3.2...3.5)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.20...8.60

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,40...1,50

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device

KDEP 1077 = $16.8^\circ \dots 17.2^\circ$

($16.7 \dots 17.3^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 18.12.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 074 890

Injection pump
Pump designation : PES4M55C320RS183
EP type number : 0 410 054 955
Governor
Governor design. : RSF375/2300M75-1
Governor no. : 0 420 021 163

Customer-spec. information
Customer : MB-PKW

Engine : OM601-ECE(W202)

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

E21

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 3.6...3.7

100 s: (3.5...3.8)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 36.0...37.0

1000 : (35.0...38.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.80...9.20

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: -

Setting point w/out bumper spring

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 25.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 074 891
Injection pump
Pump designation : PES4M55C320RS169
EP type number : 0 410 054 959
Governor
Governor design. : RSF375/2300M75
Governor no. : 0 420 021 160

Customer-spec. information
Customer : MB-PKW

Engine : OM601-ECE

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 3.3...3.4

100 s: (3.2...3.5)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,2...1,3

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Spread cm3 : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed      rpm      : 100
Del.quantity cm3/    : 54.0...0.0
              1000 s: (52.0...0.0)
Rack travel in mm   : 20.10...0.00
```

HIGH IDLE

```

1st version
Aneroid pressure h: 1100
Speed      rpm      : 2500
Rack travel in mm : 8.50...8.90
Del.quantity cm3/   : 22.0...26.0
              1000 s: (21.0...27.0)
Spread      cm3      : 2.50
              1000 s: (3.00)

```

LOW IDLE

```
Speed          rpm      : 375
Rack travel    in mm    : 6.40...6.60
Del.quantity   cm3/      : 6.0...7.0
                1000 s : (5.5...10.0)
Spread         cm3       : 1.00
                1000 s : (1.50)
```

SETTING PNEUMATIC FAST IDLE
(ELA)

Speed rpm : 425
Rack travel in mm : (8.1...9.7)
Del.quantity cm3/ : -
1000 s : (12.0...20.0)
Vacuum hPa : 400

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE--SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

1st version

```

Aneroid pressure h: 1100
Speed          rpm  : 1800
Del.quantity   cm3/ : 33.0...34.5
                1000 s: (32.0...35.5)
Spread         cm3  : 2.50
                1000 s: (3.0)
Aneroid pressure h: 1100
Speed          rpm  : 2300
Del.quantity   cm3/ : 34.0...36.0
                1000 s: (33.0...37.0)

```

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = $19.3^\circ \dots 19.7^\circ$

($19.2 \dots 19.8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At $n = 1000$ min. -1 ,
 $I = 2.5$ A, difference in delivery referenced to full-load
delivery ($9.0 \dots 11.0$) ccm/1000 strokes.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 13.03.92
Replaces : 15.10.91
Test oil : ISO-4113

Combination no. : 0 400 074 895

Injection pump
Pump designation : PES4M55C320RS110
EP type number : 0 410 054 956
Governor
Governor design. : RSF375/1700M21-1
Governor no. : 0 420 021 149

Customer-spec. information
Customer : MB-NFZ UNTERTAGE

Engine : OM616 2.4L ADA

1st version kW : 41.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...0.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 6.7...7.1

Speed rpm : 1900

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm : 6.4

```

Speed          rpm : 250
Minimum rack travel: 10.00
Speed          rpm : 375
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed          rpm : 730...830
Speed          rpm : 1000
Maximum rack travel: 1.50

```

Speed rpm : 450
Rack travel in mm : 5.1...5.3
: (5.0...5.4)

```
Torque control curve - 1st version
1st speed   rpm   : 1000
  Rack travel in m: 11.70...11.80
2nd speed   rpm   : 1400
  Rack travel in m: 11.30...11.50
3rd speed   rpm   : 1700
  Rack travel in m: 11.00...11.20
```

Aneroid/Altitude Compensator Test

1st version

Setting

```
Speed      rpm      : 1000
Pressure   hPa      : 950
Rack travel mm    : 0.00...0.20
```

Measurement

Speed 1/min : 1000

```
1st pressure hPa : 900
  Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
  Rack travel in m: 1.80...2.20
```

FUEL DELIVERY CHARACTERISTICS

1st version

```

Aneroid pressure h: 1100
Speed          rpm  : 1400
Del.quantity   cm3/ : 33.0...34.5
                1000 s: (32.0...35.5)
Spread         cm3   : 2.50
                1000 s: (3.0)
Aneroid pressure h: 1100
Speed          rpm  : 1700
Del.quantity   cm3/ : 33.0...35.0
                1000 s: (32.0...36.0)
Spread         cm3   : 2.50
                1000 s: (3.00)

```

STARTING FUEL DELIVERY

```
Speed          rpm      : 100
Del.quantity   cm3/     : 52.0...0.0
                1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00
```

HIGH IDLE

1st version

```

Aneroid pressure h: 1100
Speed              rpm : 1900
Rack travel in mm : 6.70...7.10
Del.quantity cm3/  : 13.0...17.0
                  1000 s: (12.0...18.0)
Spread            cm3 : 2.50
                  1000 s: (3.00)

```

LOW IDLE

```
Speed      rpm      : 375
Rack travel mm : 6.30...6.50
Del.quantity cm3/ : 6.0...7.0
            1000 s : (5.5...9.0)
Spread     cm3      : 1.00
            1000 s : (1.50)
```

Remarks:

•

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

Control lever at idle stop.
With $n = 375 \text{ 1/min.}$ and $p_u = 450 \text{ mbar,}$
control rod must move quickly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 13.03.92
Replaces : 22.03.91
Test oil : ISO-4113

Combination no. : 0 400 074 896

Injection pump
Pump designation : PES4M55C320RS110
EP type number : 0 410 054 956
Governor
Governor design. : RSF375/2200M21
Governor no. : 0 420 021 148

Customer-spec. information
Customer : MB-NFZ

Engine : OM616 2.4l ADA
1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)
Rack travel in mm : 20.00...0.00
Firing order : 1- 3- 4- 2

F01

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 3.6...3.7

100 s: (3.5...3.8)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.1...6.3

Del.quantity cm³/ : 0.6...0.7

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 36.0...37.0

1000 : (35.0...38.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.8...8.2

Speed rpm : 2350

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm : 6.2

Testing:

Speed rpm : 250
Minimum rack travel: 10.00
Speed rpm : 375
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 730...830
Speed rpm : 1000
Maximum rack travel: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 450
Rack travel in mm : 5.1...5.3
: (5.0...5.4)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in mm : 12.60...12.70
2nd speed rpm : 1700
Rack travel in mm : 12.20...12.40
3rd speed rpm : 2100
Rack travel in mm : 11.80...12.00

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 1000
Pressure hPa : 950
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900
Rack travel in mm : 0.50...0.70
2nd pressure hPa : 750
Rack travel in mm : 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1700
Del. quantity cm³/ : 38.0...40.0
1000 s: (37.0...41.0)
Spread cm³ : 2.50
1000 s: (3.0)
Aneroid pressure h: 1100
Speed rpm : 2100
Del. quantity cm³/ : 37.0...39.0
1000 s: (36.0...40.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2350
Rack travel in mm : 7.80...8.20
Del. quantity cm³/ : 18.0...22.0
1000 s: (17.0...23.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.10...6.30
Del. quantity cm³/ : 6.0...7.0
1000 s: (5.5...9.0)
Spread cm³ : 1.00
1000 s: (1.50)

Remarks:

:

Sliding sleeve pre-travel = 6.0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 18.12.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 074 904
Injection pump
Pump designation : PES4M55C320RS169
EP type number : 0 410 054 959
Governor
Governor design. : RSF375/2300M56-6
Governor no. : 0 420 021 110

Cust. part no. : T8

Customer-spec. information
Customer : MB-PKW

Engine : OM601-ECE

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 3.3...3.4

100 s: (3.2...3.5)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.5...8.9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.2...1.3

LOW IDLE 1

Control lever

position degrees: 12...16
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 6.5

Testing:

Speed rpm : 250
Minimum rack travel: 11.00
Speed rpm : 375
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 660...760
Speed rpm : 1000
Maximum rack travel: 1.30

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 5.3...5.5
: (5.2...5.6)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.30...12.40
2nd speed rpm : 1800
Rack travel in m: 11.70...11.90
3rd speed rpm : 2300
Rack travel in m: 11.40...11.60

Aneroid/Altitude Compensator Test

1st version

Pressure hPa : 950
Rack travel mm : 0.00...0.20

1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1800
Del.quantity cm³/ : 33.0...34.5
1000 s: (32.0...35.5)
Spread cm³ : 2.50
1000 s: (3.0)
Aneroid pressure h: 1100
Speed rpm : 2300
Del.quantity cm³/ : 34.0...36.0
1000 s: (33.0...37.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 54.0...0.0
1000 s: (54.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2500
Rack travel in mm : 8.50...8.90
Del.quantity cm³/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 6.0...7.0
1000 s: (5.5...10.0)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425
Rack travel in mm : (8.1...9.7)
Del.quantity cm³/ : -
1000 s: (12.0...20.3)
Vacuum hPa : 400

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 375 1/min. and p_u = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^{\circ} \dots 19.7^{\circ}$
($19.2 \dots 19.8^{\circ}$) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : 15.10.91
Test oil : ISO-4113
Combination no. : 0 400 075 009
Injection pump
Pump designation : PES5M55C320RS176
EP type number : 0 410 055 975
Governor
Governor design. : RSV350...1650MOC353-
6
Governor no. : 0 420 033 042

Customer-spec. information
Customer : MB-NFZ

Engine : OM602 (2,9L)

1st version kW : 62.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1630

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 4.0...4.1

100 s: (3.9...4.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 0.5...0.7

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1630

Del.quantity : 40.5...41.5

1000 : (39.5...42.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 109...117

Testing:

1st rack travel in: 11,2

Speed rpm : 1670...1680

2nd rack travel in: 4.00

Speed rpm : 1775...1793

4th rack travel in: 2000

Speed rpm : 0.30...1.70

E07

E08

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.4

Testing:

Speed rpm : 100
Minimum rack travel: 20.10
Speed rpm : 350
Rack travel in mm : 5.30...5.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1630
Rack travel in m: 12.10...12.20
2nd speed rpm : 1000
Rack travel in m: 12.90...13.10
3rd speed rpm : 1400
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000
Del.quantity cm³/ : 40.0...41.5
1000 s: (39.0...42.5)
Spread cm³ : 2.50
1000 s: (3.0)
Speed rpm : 1400
Del.quantity cm³/ : 39.5...41.5
1000 s: (38.5...42.5)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 5.0...7.0
1000 s: (4.5...9.0)
Spread cm³ : 1.00
1000 s: (1.50)

Remarks:

F07

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ.

Note rem

Test sheet
Edition
Replaces
Test oil

Combinat

Injection
Pump des
EP type
Governor
Governor
Governor

Customer
Customer

Engine

1st vers

TEST BEN

Test oil
inlet te

Overflow

Inlet pr

Test noz
assembl

Opening
pressur

Test lin

Outside
x Wall t
x Length

(A) Inje
Insp
Set
per

BEGINNING
Test pre

Prestroke

Rack tra
Firing o

F08

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD

Rack travel in mm : 9.00...12.00
Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Speed

LOW IDLE
Control
positi

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 075 013

Injection pump
Pump designation : PES5M55C320RS176
EP type number : 0 410 055 975
Governor
Governor design. : RSV400..1800MOC355
Governor no. : 0 420 033 049

Customer-spec. information
Customer : MB-NFZ

Engine : OM602 D 29

1st version kW : 67.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1800

Rack travel in mm : 11.80...11.90

Del. quantity cm³/ : 4.0...4.1

100 s: (3.9...4.2)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 400.0

Rack travel in mm : 5.3...5.5

Del. quantity cm³/ : 0.5...0.7

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1800

Del. quantity : 40.5...41.5

1000 : (39.5...42.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 83...91

Testing:

1st rack travel in: 10.80

Speed rpm : 1840...1850

2nd rack travel in: 4.00

Speed rpm : 1920...1940

4th rack travel in: 2250

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 55...63

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 5.4

Testing:

Speed rpm : 100

Minimum rack trave: 20.10

Speed rpm : 400

Rack travel in mm : 5.30...5.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version.

1st speed rpm : 1800

Rack travel in m: 11.80...11.90

2nd speed rpm : 1000

Rack travel in m: 12.40...12.60

3rd speed rpm : 1400

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000

Del.quantity cm3/ : 38.0...39.5

1000 s: (37.0...40.5)

Spread cm3 : 2.50

1000 s: (3.0)

Speed rpm : 1400

Del.quantity cm3/ : 39.0...41.0

1000 s: (38.0...42.0)

Spread cm3 : 2.50

1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 52.0...0.0

1000 s: (52.0...0.0)

Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.30...5.50

Del.quantity cm3/ : 5.0...7.0

1000 s: (4.5...9.0)

Spread cm3 : 1.00

1000 s: (1.50)

Remarks:

:

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = 15.3°...15.7°

(15.2...15.8°) angular displacement of

cam following start of delivery of

cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.10.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 014
 Injection pump
 Pump designation : PES5M55C32ORS176
 EP type number : 0 410 055 975
 Governor
 Governor design. : RSV350...1650MOC353-
 14
 Governor no. : 0 420 033 051

Customer-spec. information
 Customer : MB-NFZ

Engine : OM602 (2,9L)

1st version kW : 62.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 111

Opening
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1630

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 4.0...4.1

100 s : (3.9...4.2)

Spread cm3 : 0.2

100 s : (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 0.6...0.8

100 s : (0.5...1.0)

Spread cm3 : 0.1

100 s : (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1630

Del.quantity : 40.5...41.5

1000 : (39.5...42.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 11.3

Speed rpm : 1670...1680

2nd rack travel in: 4.00

Speed rpm : 1775...1793

4th rack travel in: 2000

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 71...79

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.2

Testing:

Speed rpm : 100

Minimum rack travel: 20.10

Speed rpm : 350

Rack travel in mm : 5.10...5.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1630

Rack travel in mm : 12.20...12.30

2nd speed rpm : 1000

Rack travel in mm : 12.20...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000

Del. quantity cm³/ : 38.5...40.5

1000 s: (37.5...41.5)

Spread cm³ : 2.50

1000 s: (3.0)

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm³/ : 54.0...0.0

1000 s: (54.0...0.0)

Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.10...5.30

Del. quantity cm³/ : 6.0...8.0

1000 s: (5.5...10.0)

Spread cm³ : 1.00

1000 s: (1.50)

Remarks:

:

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = 15.3°...15.7°

(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 18.12.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 075 923

Injection pump
Pump designation : PES5M55C320RS168
EP type number : 0 410 055 978
Governor
Governor design. : RSF350/2000M55-8
Governor no. : 0 420 021 269

Customer-spec. information
Customer : MB-PKW

Engine : OM602-2.9L

1st version kW : 70.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm³/ : 3.8...3.9
100 s: (3.7...4.0)

Spread cm³ : 0.2
100 s: (0.3)

2nd speed rpm : 350.0
Rack travel in mm : 5.2...5.4
Del.quantity cm³/ : 0.6...0.7
100 s: (0.5...1.0)
Spread cm³ : 0.1
100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 38.0...39.0
1000 : (37.0...40.0)
Spread cm³ : 2.50
1000 : (3.00)

RATED SPEED

1st version
Control lever
position degrees: 50...0
3rd rack travel in: 7.00...7.50
Speed rpm : 2200
4th rack travel in: 2500
Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000
Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever
position degrees: 12...16
Setting point w/out bumper spring
Speed rpm : 350

Rack travel in mm : 5.3

Testing:

Speed rpm : 250
Minimum rack travel: 9.20
Speed rpm : 350
Rack travel in mm : 5.20...5.40
Speed rpm : 1000
Maximum rack travel: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 450
Rack travel in mm : 4.0...4.2
 : (3.9...4.3)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in mm : 12.10...12.20
2nd speed rpm : 1800
Rack travel in mm : 11.90...12.10
3rd speed rpm : 2000
Rack travel in mm : 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1800
Del.quantity cm³/ : 40.0...41.5
 1000 s: (39.0...42.5)
Spread cm³ : 2.50
 1000 s: (3.0)
Speed rpm : 2000
Del.quantity cm³/ : 40.0...42.0
 1000 s: (39.0...43.0)
Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 54.0...0.0
 1000 s: (54.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Speed rpm : 2200
Rack travel in mm : 8.90...9.30
Del.quantity cm³/ : 29.0...33.0
 1000 s: (28.0...34.0)
Spread cm³ : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 6.0...7.0
 1000 s: (5.5...10.0)
Spread cm³ : 1.00
 1000 s: (1.50)

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 400
Rack travel in mm : (5.3...6.9)
Del.quantity cm³/ : -
 1000 s: (7.0...15.0)
Vacuum hPa : 400

Remarks:

:

Sliding sleeve pre-travel = 6.25 mm

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.03.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 075 927
Injection pump
Pump designation : PES5M55C320RS168
EP type number : 0 410 055 978
Governor
Governor design. : RSF350/2000M69-8
Governor no. : 0 420 021 167

Customer-spec. information
Customer : MB-PKW

Engine : OM602-2.9L

1st version kW : 72.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 3.8...3.9

100 s : (3.7...4.0)

Spread cm3 : 0.2

100 s : (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm3 : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1100

Del.quantity : 38.0...39.0

1000 : (37.0...40.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.10...7.60

Speed rpm : 2200

4th rack travel in: 2500

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 p
Edition : 15.01.93
Replaces : 03.08.90
Test oil : ISO-4113

Combination no. : 0 402 036 733

Injection pump
Pump designation : PES6P120A720/3LS3247
EP type number : 0 412 026 735
Governor
Governor design. : RGV300...11COPAS76-4
Governor no. : 0 421 813 851

Customer-spec. information
Customer : MAN

Engine : D2866LXF/A00

1st version kW : 273.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 14.50...15.50
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10
& maximum rack tra: 14.5...15.5
Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm³/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.8...5.2
Del.quantity cm³/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145
travel mm : 8.30...8.50
2nd speed rpm : 300
travel mm : 1.10...1.30
3rd speed rpm : 500
travel mm : 2.90...3.50
4th speed rpm : 900
travel mm : 5.90...6.30
5th speed rpm : 1450
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1200
Del.quantity : 242.0...244.0
1000 : (239.0...247.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 298...306

Testing:

1st rack travel in: 13.60
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1260...1290
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 259...267

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 320...430

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.50...14.60
2nd speed rpm : 700
Rack travel in m: 15.00...15.10
3rd speed rpm : 950
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

F17

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 14.00...14.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm3/ : 230.0...236.0
1000 s: (227.0...239.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.60
Speed rpm : 1140...1150

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7890

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 18.12.92
Replaces : 10.92
Test oil : ISO-4113

Combination no. : 0 402 648 907

Injection pump
Pump designation : PE8P120A320LS7839-10
EP type number : 0 412 628 855
Governor
Governor design. : RQV300...950PA797-22
Governor no. : 0 421 813 909

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kw : 370.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.10...15.30

Del.quantity cm³/ : 26.5...26.7

100 s: (26.2...27.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50

2nd speed rpm : 617
travel mm : 5.00...5.50

3rd speed rpm : 780
travel mm : 6.10...6.60

4th speed rpm : 1010
travel mm : 8.30...8.80

5th speed rpm : 1092
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550

Aneroid pressure h: 900
Del.quantity : 265.0...267.0
1000 : (262.0...270.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 15.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 900
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 10.00...10.20
2nd pressure hPa : 550
Rack travel in m: 12.80...12.90
3rd pressure hPa : 1100
Rack travel in m: 15.20...15.40 *
4th pressure hPa : 1300
Rack travel in m: 15.60...15.70
5th pressure hPa : -
Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 240 (260)

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FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 950
Del.quantity cm3/ : 281.0...284.0
1000 s: (278.0...287.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV
Edition : 15.01.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R328-3
Type number : 0 460 494 258
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 086T-1.6 LLK

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 750
Setting value mm: 3.00...3.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 750
Setting value bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm3/
1000S.: 42.00...43.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 26.50...27.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 9.00...11.00

Shutoff
electromagnet Volt: 12.0
Del. quantity cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 2.00...3.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 750
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...85.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: 7.00...9.00 #
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250
Supply pump
pressure
difference bar: 0.10...0.30#
Shutoff
electromagnet Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2250
Charge press hPa: 750
TD travel mm: 7.00...7.80
mm: (6.70...8.10)
electromagnet Volt: 12
2nd speed 1/min: 2000
Charge press hPa: 750
TD travel mm: 6.40...7.20
mm: (6.10...7.50)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 750
TD travel mm: 3.00...3.40
mm: (2.50...3.90)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 750
TD travel mm: 1.70...2.50
mm: (1.40...2.80)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700
Charge press. hPa: 750
Supply-pump
pressure bar: 3.30...3.90
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 750
Supply-pump
pressure bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 2250
Charge press. hPa: 750
Supply-pump
pressure bar: 7.70...8.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (27.80...97.30)
2nd speed 1/min: 2250
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Overflow : 55.60...152.90
quantity cm3/10s: (41.70...166.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 900
Charge-air pressure-setting
point hPa: 300*
LDA-stroke mm: 5.5
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 33.00...34.00
1000S.: (30.50...36.50)
2nd speed 1/min: 2650
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 2525
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 13.00...17.00
1000S.: (11.00...19.00)
8th speed 1/min: 2425
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 26.50...36.50
1000S.: (25.50...37.50)
9th speed 1/min: 2250
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 36.30...38.30
1000S.: (35.10...39.50)
12th speed 1/min: 1500
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 42.00...43.00
1000S.: (40.30...44.70)
14th speed 1/min: 600
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...30.00
1000S.: (22.5...32.50)
18th speed 1/min: 700
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.0...37.0
1000S.: (32.5...38.5)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (4.50...15.50)

High Idle:

1st speed 1/mi: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (5.00...15.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.00...3.00
1000S.: (0.00...5.50)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...4.50
1000S.: (0.00...7.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/: 9.0...13.0
difference 1000S.: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Inj.-qty. cm³/: MAX. 3.00 "
difference 1000S.: -

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.60...0.80 "
difference mm: -
Shutoff
electromagnet Volt: 12.0
2nd speed 1/min: 1250
TD-travel : 1.00...1.40 "
difference mm: -
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.60...1.00 "
difference bar: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17.00...37.00
1000S.: (17.00...37.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: K1
KF	mm: 5.6...6.0
MS	mm: 1.3...1.5
LDA stroke	mm: 5.5

Remarks:

⋮

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV
Edition : 15.01.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R270-1
Type number : 0 460 494 269
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 068.4-1.6l Caddy

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.10...2.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250

F24

Setting value bar: 4.90...5.50

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Dispersion cm³/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000S.: 28.5...29.5

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 11.0...13.0

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm³/
1000S.: 2.50...3.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2475
Del. quantity cm³/
1000S.: 14.00...18.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 35.00...85.00
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm³/
difference 1000S.: 6.50...12.50 #

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 0.60...0.80 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250
TD travel mm: 6.50...7.30
mm: (6.20...7.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 2.10...2.50
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
TD travel mm: 0.90...1.70
mm: (0.60...2.00)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3.00...3.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 4.90...5.50

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2250
Supply-pump
pressure bar: 7.70...8.30

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12

Overflow : 55.60...152.90
quantity cm³/10s: (41.70...166.80)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)

5th speed 1/min: 2475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 14.00...18.00
1000S.: (12.00...20.00)

8th speed 1/min: 2400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 18.00...28.00
1000S.: (17.00...29.00)

9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.50...29.50
1000S.: (26.30...30.70)

10th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.5...29.5
1000S.: (26.8...31.2)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 11.00...13.00
1000S.: (8.00...16.00)

2nd speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.50...8.50
1000S.: (3.00...11.00)

Dispersion cm³/: 2.0
1000S.: (3.0)

High Idle:

1st speed 1/min: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 7.00...9.00
1000S.: (4.00...12.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.50...3.50
1000S.: (1.00...5.00)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.20...5.20
1000S.: (1.70...6.70)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1250
Inj.-qty. cm3/: MAX. 3.00 "
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 1.40...1.80 "
difference mm: -
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 1.10...1.50 "
Shutoff
electromagnet Volt: 12.0
3rd speed 1/min: 1250
Supply pump-
pressure : 1.10...1.50
difference bar: (0.90...1.70)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 35.00...85.00
1000S.: (35.00...85.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 10.00...30.00
1000S.: (10.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5,6...6.0
MS mm: 1.2...1.6

Remarks:

:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 640 101AA
Injection pump
Pump designation : PE12A95D610LS2453
EP type number : 0 410 690 998
Governor
Governor design. : RQV300...1150AB1056D
Governor no. : 0 420 214 245

Customer-spec. information
Customer : KHD

Engine : BF12L413FW

1st version kW : 277.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 9- 8- 5- 2-
11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-
180-195-240-255-300-
315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 10.50...10.60
Del. quantity cm³/ : 9.4...9.6
100 s : (9.2...9.8)
Spread cm³ : 0.3
100 s : (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 6.4...6.6
Del. quantity cm³/ : 1.1...1.7
100 s : (0.8...1.9)
Spread cm³ : 0.3
100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 700
Del. quantity : 94.0...96.0
1000 : (92.0...98.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 9.40
Speed rpm : 1190...1200
2nd rack travel in: 4.00

Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 310...380

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150
Rack travel in m: 10.50...10.60
2nd speed rpm : 775
Rack travel in m: 10.50...10.60
3rd speed rpm : 930
Rack travel in m: 10.70...10.90

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
2nd pressure hPa : 329
Rack travel in m: 10.60...10.70
3rd pressure hPa : 280
Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 775
Del.quantity cm³/ : 98.5...101.5
1000 s: (96.0...104.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.40...14.60

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 640 113AH

Injection pump
Pump designation : PE12A95D610LS2453
EP type number : 0 410 690 998
Governor
Governor design. : RQV300...1250AB1223L
Governor no. : 0 420 212 092

Customer-spec. information
Customer : KHD

Engine : F12L413F

1st version kW : 254.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 9- 8- 5- 2-

Phasing : 0-15-60-75-120-135-
180-195-240-255-300-
315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 9.60...9.70

Del.quantity cm³/ : 8.7...8.9

100 s : (8.5...9.1)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 1.1...1.7

100 s : (0.8...1.9)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 200
travel mm : 0.70...0.80

2nd speed rpm : 500
travel mm : 2.60...2.80

3rd speed rpm : 900
travel mm : 5.60...5.80

4th speed rpm : 1300
travel mm : 8.60...8.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 87.0...89.0

1000 : (85.0...91.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 8.60
Speed rpm : 1290...1300
2nd rack travel in: 4.50
Speed rpm : 1340...1370
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 375...485

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 9.60...9.70
2nd speed rpm : 650
Rack travel in m: 10.10...10.20
3rd speed rpm : 850
Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm3/ : 84.5...87.5
1000 s: (82.0...90.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.60
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 13.50...14.20

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 29.11.91
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 646 279
Injection pump
Pump designation : PE6A95D410LS2621
EP type number : 0 410 696 982
Governor
Governor design. : RQV350...1150AB1195-1L
Governor no. : 0 420 212 231

Customer-spec. information
Customer : KHD

Engine : F6L413F

1st version kW : 141.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00
Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.30...9.40

Del.quantity cm3/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 1.1...1.7

100 s: (0.8...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.50

2nd speed rpm : 370

travel mm : 1.40...1.90

3rd speed rpm : 420

travel mm : 2.30...2.80

4th speed rpm : 770

travel mm : 4.70...5.20

5th speed rpm : 1200

travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1290

Rack travel in mm : 7.00...9.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 8.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1240...1270

LOW IDLE 1

Control lever
position degrees: 84...92

Testing:

Speed rpm : 200
Minimum rack travel: 11.20
Speed rpm : 350
Rack travel in mm : 6.90...7.10
Rack travel in mm : 2.00
Speed rpm : 440...500

TORQUE CONTROL

Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.30...9.40
2nd speed rpm : 500
Rack travel in m: 10.10...10.20
3rd speed rpm : 800
Rack travel in m: 9.80...10.00
4th speed rpm : 1000
Rack travel in m: 9.50...9.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm3/ : 75.0...77.0
1000 s: (72.5...79.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.20...15.60

Remarks:

: WARDAM

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 18.12.91
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 648 131
Injection pump
Pump designation : PE8A95D320LS2421
EP type number : 0 410 698 994
Governor
Governor design. : RQ750AB1155R
Governor no. : G 420 201 627

Customer-spec. information
Customer : MAN

Engine : D2538 MTE

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 1.70...1.80
: (1.65...1.85)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 13.3...13.5
100 s: (13.1...13.7)

Spread cm3 : 0.3

2nd speed rpm : 250.0
Rack travel in mm : 6.4...6.6
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.3)

Spread cm3 : 0.3

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 133.5...135.5
1000 : (131.5...137.5)
Spread cm3 : 3.00

RATED SPEED

1st version
Testing:
1st rack travel in: 12.40
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 775...785
4th rack travel in: 795
Speed rpm : 0.00...1.00

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 750...755

Remarks:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 31.07.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 678 038
Injection pump
Pump designation : PE8A95D410LS2451
EP type number : 0 410 698 992
Governor
Governor design. : RSV300...1000A7C1002
L
Governor no. : 0 420 232 309

Customer-spec. information
Customer : KHD

Engine : F8L413F

1st version kW : 147.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00
Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9.10...9.20

Del.quantity cm3/ : 7.9...8.1

100 s: (7.7...8.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.1...1.8

100 s: (0.8...2.0)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 79.5...81.5

1000 : (77.5...83.5)

Spread cm3 : 3.00

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 64...72

Testing:

1st rack travel in: 8.10

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1150

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 420...510

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 9.10...9.20

2nd speed rpm : 400

Rack travel in m: 9.70...9.80

3rd speed rpm : 700

Rack travel in m: 9.40...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/ : 80.5...83.5

1000 s: (78.5...85.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.10

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 116.5...126.5

1000 s: (113.5...129.5)

Rack travel in mm : 14.20...14.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 678 040
 Injection pump
 Pump designation : PE8A95D410LS2608
 EP type number : 0 410 698 988
 Governor
 Governor design. : RSV300...1325A8C1002
 L
 Governor no. : 0 420 232 310

Customer-spec. information
 Customer : KHD

Engine : F8L413F

1st version kW : 188.0
 Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 9.70...9.80

Del.quantity cm³/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm³ : 0.5

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1325

Del.quantity : 91.5...93.5

1000 : (89.5...95.5)

Spread cm³ : 3.00

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 109...117

Testing:

1st rack travel in: 8.70

Speed rpm : 1365...1375

2nd rack travel in: 4.00

Speed rpm : 1390...1420

4th rack travel in: 1575

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 66...74

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 310...370

Speed rpm : 700

Maximum rack trave: 1.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1325

Rack travel in m: 9.70...9.80

2nd speed rpm : 500

Rack travel in m: 10.00...10.10

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70

Speed rpm : 1365...1375

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 116.5...127.5

1000 s: (113.5...130.5)

Rack travel in mm : 14.00...14.40

HIGH IDLE

1st version

Rack travel in mm : 3.90...4.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,8 g 2
Edition : 27.11.92
Replaces : 09.92
Test oil : ISO-4113

Combination no. : 0 400 844 047

Injection pump
Pump designation : PES4A90D410RS2294
EP type number : 0 410 894 011
Governor
Governor design. : RQV300...1425AB740L
Governor no. : 0 420 212 037

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 314

1st version kw : 62.5
Rated speed : 2850

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
: (2.10...2.30)
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.70...9.80

Del.quantity cm3/ : 6.2...6.3

100 s: (6.0...6.5)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 8.40...8.60

2nd speed rpm : 950

travel mm : 5.20...5.50

3rd speed rpm : 775

travel mm : 4.10...4.60

4th speed rpm : 550

travel mm : 2.70...3.00

5th speed rpm : 300

travel mm : 0.70...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 62.5...63.5

1000 : (60.5...65.5)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 8.70
Speed rpm : 1455...1465
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 66...74

Testing:
Speed rpm : 100
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION
Speed rpm : 370...520

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.70
Speed rpm : 1455...1465

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 71.0...81.0
1000 s: (68.0...84.0)
Rack travel in mm : 13.70...14.30

Remarks:

:

APPLICATION

Unimog

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a 11
Edition : 27.11.92
Replaces : 09.92
Test oil : ISO-4113

Combination no. : 0 400 844 091

Injection pump
Pump designation : PES4A90D410RS2666
EP type number : 0 410 854 029
Governor
Governor design. : RQV300...1400AB1065-12L
Governor no. : 0 420 212 207

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM364

1st version kW : 61.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 5.9...6.0

100 s: (5.7...6.2)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.6...8.8

Del. quantity cm³/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 59.0...60.0

1000 : (57.0...62.0)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 9.50

Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80

Testing:
Speed rpm : 100
Minimum rack trave: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.50...10.60
2nd speed rpm : 475
Rack travel in m: 11.50...11.60
3rd speed rpm : 850
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 475
Del.quantity cm3/ : 45.0...47.0
1000 s: (42.5...49.5)
Speed rpm : 850
Del.quantity cm3/ : 47.5...50.5
1000 s: (45.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.50
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

:
Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 j 1
 Edition : 21.01.93
 Replaces : 04.92
 Test oil : ISO-4113

Combination no. : 0 400 844 096

Injection pump
 Pump designation : PES4A95D410RS2809
 EP type number : 0 410 894 993
 Governor
 Governor design. : RQV300...1400AB1065-23L
 Governor no. : 0 420 212 227

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 65.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del. quantity cm³/ : 6.4...6.6

100 s: (6.2...6.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 8.5...8.7
 Del. quantity cm³/ : 0.8...1.2
 100 s: (0.5...1.4)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1450
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del. quantity : 64.5...66.5
 1000 : (62.5...68.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 8.90
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 73...81

Testing:
Speed rpm : 100
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION
Speed rpm : 550...700

TORQUE CONTROL
Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.90...10.00
2nd speed rpm : 400
Rack travel in m: 11.10...11.20
3rd speed rpm : 630
Rack travel in m: 10.70...11.00
4th speed rpm : 925
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 400
Del.quantity cm3/ : 49.0...53.0
1000 s: (46.5...55.5)
Speed rpm : 630
Del.quantity cm3/ : 51.5...55.5
1000 s: (49.0...58.0)
Speed rpm : 925
Del.quantity cm3/ : 57.0...61.0
1000 s: (54.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 8.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.40...14.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 v 10
 Edition : 27.11.92
 Replaces : 09.92
 Test oil : ISO-4113
 Combination no. : 0 400 846 493
 Injection pump
 Pump designation : PES6A90D41QRS2596
 EP type number : 0 410 896 073
 Governor
 Governor design. : RQV300...1400AB1120-1L
 Governor no. : 0 420 212 157

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM352A

1st version kW : 124.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 7.3...7.4

100 s: (7.1...7.6)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 700

Del.quantity : 73.0...74.0

1000 : (71.5...76.5)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 10.90

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1570...1600

4th rack travel in: 1750

Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78

Testing:
Speed rpm : 100
Minimum rack travel: 10.10
Speed rpm : 300
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION
Speed rpm : 590...660

TORQUE CONTROL
Dimension a mm : 1.10
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 11.90...12.00
2nd speed rpm : 500
Rack travel in m: 13.00...13.10
3rd speed rpm : 1000
Rack travel in m: 12.70...12.90
4th speed rpm : 1200
Rack travel in m: 12.10...12.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.00...13.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.90...12.00
2nd pressure hPa : 320
Rack travel in m: 12.70...12.80
3rd pressure hPa : 220
Rack travel in m: 12.20...12.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm³/ : 67.5...69.5
1000 s: (65.5...71.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 56.0...58.0
1000 s: (54.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 72.0...82.0
1000 s: (69.0...85.0)
Rack travel in mm : 14.90...15.30

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 p
Edition : 27.11.92
Replaces : 09.92
Test oil : ISO-4113

Combination no. : 0 400 846 549

Injection pump
Pump designation : PES6A95D410RS2471
EP type number : 0 410 896 952
Governor
Governor design. : RQV300...1250AB1089-
2L
Governor no. : 0 420 212 190

Customer-spec. information
Customer : KHD

Engine : BF6L913C

1st version kW : 141.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.60...11.70

Del. quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.30...1.40

2nd speed rpm : 650
travel mm : 3.70...3.90

3rd speed rpm : 1200
travel mm : 6.90...7.10

4th speed rpm : 1290
travel mm : 8.40...8.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1290

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 10.60
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1345...1375
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 69...77

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION
Speed rpm : 350...485

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.60...11.70
2nd speed rpm : 500
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 850
Del.quantity cm³/ : 95.5...98.5
1000 s: (93.0...101.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 122.0...132.0
1000 s: (119.0...135.0)

Rack travel in mm : 15.80...16.20

Remarks:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 05.02.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 846 578AA

Injection pump
Pump designation : PES6A95D32GRS2779
EP type number : 0 410 896 903
Governor
Governor design. : RQV350...1200AB1236-7R
Governor no. : 0 420 213 119

Customer-spec. information
Customer : NAVISTAR

Engine : DT 466

1st version kW : 145.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 110

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,5

Test Lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75
: (2.60...2.80)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.10...13.20

Del.quantity cm³/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 1.6...2.0

100 s: (1.4...2.2)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 8.60...9.00

2nd speed rpm : 1250

travel mm : 7.30...7.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 900

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 41...49

Testing:
1st rack travel in: 12.10
Speed rpm : 1255...1285
2nd rack travel in: 4.00
Speed rpm : 1375...1385
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.10...13.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 235
Rack travel in m: 10.10...10.20
3rd pressure hPa : 520
Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 65.0...69.0
1000 s: (63.0...71.0)

BREAKAWAY

G22

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1230...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 17.0...21.0
1000 s: (15.0...23.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #
: 1819484C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RAB 9,7 e
 Edition : 21.09.92
 Replaces : 10.91
 Test oil : ISO-4113
 Combination no. : 0 400 846 588
 Injection pump
 Pump designation : PES6A95D420LS2804
 EP type number : 0 410 896 899
 Governor
 Governor design. : RQ200/1050AB1246-1R
 Governor no. : 0 420 201 652

Customer-spec. information
 Customer : RABA

Engine : D2156 HM6 UT

1st version kW : 162.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.80...1.90
 : (1.75...1.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 200.0

Rack travel in mm : 7.4...7.6

Del.quantity cm³/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 500

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 500

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1125...1155

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack travel: 8.00

Speed rpm : 200

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 290...330

TORQUE CONTROL

Dimension a mm : 0.45

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.00...12.10

2nd speed rpm : 415

Rack travel in m: 13.10...13.50

3rd speed rpm : 680

Rack travel in m: 12.70...13.10

4th speed rpm : 835

Rack travel in m: 12.20...12.70

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.70...10.80

2nd pressure hPa : 260

Rack travel in m: 12.50...12.60

3rd pressure hPa : 180

Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 140 (160)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 600

Del.quantity cm³/ : 111.5...114.5

1000 s: (109.0...117.0)

Aneroid pressure h: -

Speed rpm : 500

G24

Del.quantity cm³/ : 74.0...76.0

1000 s: (72.0...78.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 150.0...160.0

1000 s: (147.0...163.0)

Rack travel in mm : 17.50...17.70

Remarks:

:

Set idle stop at 200 min -1 to a control-rod travel of 6.5 mm

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 5,9 e
 Edition : 21.09.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 400 846 597
 Injection pump
 Pump designation : PES6A90D410RS2813
 EP type number : 0 410 896 089
 Governor
 Governor design. : RQV300...1250AB1264L
 Governor no. : 0 420 212 233

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8065.25.000

1st version kW : 145.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 7.9...8.0

100 s: (7.7...8.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 8.6...8.8

Del.quantity cm3/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.60...1.10

2nd speed rpm : 445

travel mm : 2.20...2.70

3rd speed rpm : 540

travel mm : 2.80...3.30

4th speed rpm : 897

travel mm : 5.00...5.50

5th speed rpm : 1324

travel mm : 8.00...8.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1455

Rack travel in mm : 9.60...12.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 700

Del.quantity : 79.0...80.0

1000 : (77.0...82.0)

Spread cm³ : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 103...111

Testing:
1st rack travel in: 10.70
Speed rpm : 1310...1320
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1510
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 75...83

Testing:
Speed rpm : 225
Minimum rack travel: 12.10
Speed rpm : 325
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION
Speed rpm : 350...450

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.70...11.80
2nd speed rpm : 400
Rack travel in m: 13.30...13.40
3rd speed rpm : 700
Rack travel in m: 12.60...12.80
4th speed rpm : 915
Rack travel in m: 11.90...12.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 700
Rack travel mm : 12.90...13.00

Measurement
Speed 1/min : 400

1st pressure hPa : -
Rack travel in m: 10.80...10.90
2nd pressure hPa : 315
Rack travel in m: 11.60...11.70
3rd pressure hPa : 280
Rack travel in m: 12.00...12.20

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 700
Del. quantity cm³/ : 82.0...84.0
1000 s: (79.5...86.5)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 51.0...52.0
1000 s: (49.0...54.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 846 601

Injection pump
Pump designation : PES6A80D410RS2819
EP type number : 0 410 886 064
Governor
Governor design. : RQV300...1250AB1262-2L
Governor no. : 0 420 212 237

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8061.05.000

1st version kW : 117.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
: (2.70...2.90)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.70...11.80

Del. quantity cm³/ : 6.0...6.1

100 s: (5.8...6.2)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 9.0...9.2

Del. quantity cm³/ : 0.8...1.4

100 s: (0.6...1.5)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.70...1.20

2nd speed rpm : 350

travel mm : 1.50...2.00

3rd speed rpm : 490

travel mm : 2.90...3.40

4th speed rpm : 850

travel mm : 5.10...5.60

5th speed rpm : 1290

travel mm : 8.20...8.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1390

Rack travel in mm : 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 60.0...61.0

1000 : (58.5...62.5)

Spread cm³ : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 10.70
Speed rpm : 1280...1290
2nd rack travel in: 4.00
Speed rpm : 1395...1425
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 67...76

Testing:

Speed rpm : 200
Minimum rack travel: 10.60
Speed rpm : 300
Rack travel in mm : 9.00...9.20

TORQUE CONTROL

Dimension a mm : 0.90
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.70...11.80
2nd speed rpm : 350
Rack travel in m: 12.70...12.80
3rd speed rpm : 700
Rack travel in m: 12.40...12.60
4th speed rpm : 950
Rack travel in m: 12.10...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 58.5...60.5
1000 s: (56.5...62.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1280...1290

STARTING FUEL DELIVERY

Speed rpm : 100

G28

Del.quantity cm³/ : 85.0...95.0
1000 s: (82.0...98.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 846 602

Injection pump
Pump designation : PES6A90D410RS2813
EP type number : 0 410 896 089
Governor
Governor design. : RQV300...1050AB1265-
1L
Governor no. : 0 420 212 239

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8065.25.099

1st version kW : 135.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
: (2.70...2.90)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.60...12.70

Del. quantity cm3/ : 7.5...7.6
100 s: (7.3...7.8)

Spread cm3 : 0.3
100 s: (0.4)

2nd speed rpm : 425.0
Rack travel in mm : 8.6...8.8
Del. quantity cm3/ : 0.6...1.0
100 s: (0.4...1.2)
Spread cm3 : 0.2
100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 380
travel mm : 1.60...2.10
2nd speed rpm : 430
travel mm : 2.30...2.80
3rd speed rpm : 460
travel mm : 2.60...3.10
4th speed rpm : 740
travel mm : 4.70...5.20
5th speed rpm : 1110
travel mm : 8.10...8.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1175
Rack travel in mm : 10.30...12.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 700
Del. quantity : 75.0...76.0
1000 : (73.0...78.0)

Spread cm³ : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 11.60
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1320
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 325
Minimum rack travel: 11.00
Speed rpm : 425
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION
Speed rpm : 550...700

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.60...12.70
2nd speed rpm : 500
Rack travel in m: 13.90...14.00
3rd speed rpm : 800
Rack travel in m: 13.40...13.60
4th speed rpm : 920
Rack travel in m: 12.90...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.90...14.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.00...12.10
2nd pressure hPa : 520
Rack travel in m: 13.40...13.50
3rd pressure hPa : 440
Rack travel in m: 12.40...12.70

H02

START CUT-OUT

Speed 1/min : 340 (360)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 52.0...54.0
1000 s: (50.0...56.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 846 605
Injection pump
Pump designation : PES6A90D410RS2823
EP type number : 0 410 896 093
Governor
Governor design. : RQV300...1350AB1265-
2L
Governor no. : 0 420 212 240
Customer-spec. information
Customer : IVECO-FIAT
Engine : 8060.25.679
1st version kW : 170.0
Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198
Inlet press., bar : 1.50
Test nozzle holder
assembly : 0 681 343 009
Opening
pressure, bar : 172...175
Test lines : 1 680 750 014
Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 2.75...2.85
: (2.70...2.90)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350
Rack travel in mm : 12.70...12.80
Del.quantity cm3/ : 8.1...8.2
100 s: (7.9...8.4)
Spread cm3 : 0.3
100 s: (0.4)
2nd speed rpm : 300.0
Rack travel in mm : 8.8...9.0
Del.quantity cm3/ : 0.9...1.3
100 s: (0.7...1.5)
Spread cm3 : 0.2
100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50
2nd speed rpm : 460
travel mm : 2.20...2.70
3rd speed rpm : 640
travel mm : 3.20...3.70
4th speed rpm : 1015
travel mm : 5.80...6.30
5th speed rpm : 1390
travel mm : 8.20...8.70

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1490
Rack travel in mm : 10.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1350
Del.quantity : 81.0...82.0
1000 : (79.0...84.0)

Spread cm³ : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 11.70
Speed rpm : 1380...1390
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1640
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 69...77

Testing:

Speed rpm : 200
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.80...9.00

CONSTANT REGULATION

Speed rpm : 325...475

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1350
Rack travel in m: 12.70...12.80
2nd speed rpm : 500
Rack travel in m: 13.70...13.80
3rd speed rpm : 800
Rack travel in m: 13.10...13.20
4th speed rpm : 900
Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.60...11.70
2nd pressure hPa : 520
Rack travel in m: 12.90...13.00
3rd pressure hPa : 440

H04

Rack travel in m: 12.50...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del. quantity cm³/ : 79.0...81.0
1000 s: (76.5...83.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1380...1390

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 145.0...155.0
1000 s: (142.0...158.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 607
 Injection pump
 Pump designation : PES6A90D410RS2813
 EP type number : 0 410 896 089
 Governor
 Governor design. : RQV300...1050AB1265-3L
 Governor no. : 0 420 212 241

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8065.25.099

1st version kW : 135.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 425.0

Rack travel in mm : 8.4...8.6

Del.quantity cm3/ : 0.6...1.0

100 s: (0.4...1.2)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 380

travel mm : 1.60...2.10

2nd speed rpm : 430

travel mm : 2.30...2.80

3rd speed rpm : 460

travel mm : 2.60...3.10

4th speed rpm : 750

travel mm : 4.80...5.30

5th speed rpm : 1130

travel mm : 8.00...8.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 11.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 77.5...78.5

1000 : (75.5...80.5)

Spread cm3 : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:

1st rack travel in: 11.70
Speed rpm : 1120...1130
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1320
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 75...83

Testing:

Speed rpm : 325
Minimum rack travel: 11.00
Speed rpm : 425
Rack travel in mm : 8.40...8.60

CONSTANT REGULATION

Speed rpm : 460...610

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050
Rack travel in m: 12.70...12.80
2nd speed rpm : 500
Rack travel in m: 14.00...14.10
3rd speed rpm : 750
Rack travel in m: 13.70...13.80
4th speed rpm : 900
Rack travel in m: 13.10...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.70...12.80
2nd pressure hPa : 500
Rack travel in m: 13.80...13.90
3rd pressure hPa : 450
Rack travel in m: 13.20...13.50

H06

START CUT-OUT

Speed 1/min : 340 (360)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 85.0...87.0
1000 s: (82.5...89.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 65.0...67.0
1000 s: (63.0...69.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1120...1130

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 105.0...115.0
1000 s: (102.0...118.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 27.11.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 400 846 608

Injection pump
Pump designation : PES6A95D320RS2796
EP type number : 0 410 896 901
Governor
Governor design. : RQ300/1300AB1253-3R
Governor no. : 0 420 201 654

Customer-spec. information
Customer : DAF

Engine : NS 156G

1st version kw : 156.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 7.50...10.50

H07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 770

Rack travel in mm : 7.50...8.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 770

Rack travel in mm : 8.0

Testing:

1st rack travel in: 11.60

Speed rpm : 1325...1340

2nd rack travel in: 4.00

Speed rpm : 1410...1440

4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack trave: 7.70
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 525...565

TORQUE CONTROL

Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 12.60...12.70
2nd speed rpm : 750
Rack travel in m: 14.20...14.80
3rd speed rpm : 960
Rack travel in m: 13.50...14.10
4th speed rpm : 1055
Rack travel in m: 12.90...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.90...11.10
2nd pressure hPa : 250
Rack travel in m: 12.30...12.40
3rd pressure hPa : 90
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1290
Del.quantity cm3/ : 87.0...89.0
1000 s: (84.5...91.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 45.5...46.5
1000 s: (43.5...48.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1325...1340

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 6.0...10.0
1000 s: (3.5...12.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

APPLICATION

Cmnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 37
Edition : 05.02.93
Replaces : 05.89
Test oil : ISO-4113

Combination no. : 0 400 864 072

Injection pump
Pump designation : PES4A85D410/3RS2610
EP type number : 0 410 884 951
Governor
Governor design. : RSV325...1200A2C2102
-3L
Governor no. : 0 420 232 508

Customer spec. information
Customer : KHD

Engine : F4L913

1st version kW : 59.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.30...10.40

Del. quantity cm³/ : 6.8...6.9

100 s: (6.6...7.1)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 7.6...7.8

Del. quantity cm³/ : 0.7...1.3

100 s: (0.5...1.5)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 68.5...69.5

1000 : (66.5...71.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 97...105

Testing:

1st rack travel in: 9.30

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1290...1320

3rd rack travel in: 4.00

Speed rpm : 1305...1335
4th rack travel in: 1475
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 69...77

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 7.2

Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 325

Rack travel in mm : 7.60...7.80

Rack travel in mm : 2.00

Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 10.30...10.40

2nd speed rpm : 750

Rack travel in m: 10.70...10.80

4th speed rpm : 835

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm³/ : 59.5...61.5
1000 s: (57.0...64.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 140.0...150.0
1000 s: (137.0...153.0)

Rack travel in mm : 19.50...21.00

Remarks:

: FENDT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 o 7
Edition : 05.02.93
Replaces : 01.91
Test oil : ISO-4113

Combination no. : 0 400 864 085

Injection pump
Pump designation : PES4A85D410/3RS2799
EP type number : 0 410 884 944
Governor
Governor design. : RSV325...1150A8C2239
-3L
Governor no. : 0 420 232 553

Customer-spec. information
Customer : KHD

Engine : BF4L913

1st version kW : 74.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 8.2...8.3

100 s: (8.0...8.5)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.4...7.6

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 82.0...83.0

1000 : (80.0...85.0)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 10.70

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1215...1245

3rd rack travel in: 4.00

Speed rpm : 1240...1270
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 7.40...7.60
Rack travel in mm : 2.00
Speed rpm : 415...475

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.70...11.80
2nd speed rpm : 500
Rack travel in m: 12.00...12.20
4th speed rpm : 830
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 79.5...81.5
1000 s: (77.0...84.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 17.60...18.00

Remarks:

:

APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
Edition : 18.12.92
Replaces : 10.92
Test oil : ISO-4113

Combination no. : 0 400 864 094

Injection pump
Pump designation : PES4A90D320/3RS2743
EF type number : 0 410 894 034
Governor
Governor design. : RSV325...1150A5C505-5R
Governor no. : 0 420 233 289

Customer-spec. information
Customer : MWM

Engine : TD226B-4

1st version kW : 63.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.50...9.60

Del.quantity cm3/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 71.5...72.5

1000 : (69.5...74.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:
1st rack travel in: 8.50
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1210...1240
3rd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1330
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.2

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 415...475

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.50...9.60
2nd speed rpm : 500
Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 55.0...57.0
1000 s: (52.5...59.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 138.0...148.0
1000 s: (135.0...151.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 11.01.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 864 095
Injection pump
Pump designation : PES4A95D410/3RS2789
EP type number : 0 410 894 995
Governor
Governor design. : RSV325...1175A5C2163
-7L
Governor no. : 0 420 232 590

Customer-spec. information
Customer : KHD

Engine : F4L913

1st version kw : 55.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 7.4...7.6

100 s: (7.2...7.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 9.3...9.5

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Del.quantity : 74.5...76.5

1000 : (72.5...78.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 97...105

Testing:

1st rack travel in: 10.90

Speed rpm : 1215...1225

2nd rack travel in: 4.00

Speed rpm : 1265...1295

3rd rack travel in: 4.00

Speed rpm : 1280...1310
4th rack travel in: 1430
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 8.9

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 9.30...9.50
Rack travel in mm : 2.00
Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 11.90...12.00
2nd speed rpm : 800
Rack travel in m: 12.30...12.40
3rd speed rpm : 1025
Rack travel in m: 12.10...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 69.0...72.0
1000 s: (66.5...74.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

Remarks:

: DX3.75

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 r
Edition : 11.01.93
Replaces : 05.90
Test oil : ISO-4113
Combination no. : 0 400 866 125
Injection pump
Pump designation : PES6A85D410/3RS2761
EP type number : 0 410 886 895
Governor
Governor design. : RSV325...1150A8C674-
1L
Governor no. : 0 420 232 518

Customer-spec. information
Customer : KHD

Engine : BF6L913

1st version kw : 112.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198
Inlet press., bar : 1.50
Test nozzle holder
assembly : 0 681 343 009
Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 2.50...2.60
: (2.45...2.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 12.10...12.20
Del. quantity cm3/ : 8.4...8.5
100 s: (8.2...8.7)
Spread cm3 : 0.3
100 s: (0.5)

2nd speed rpm : 325.0
Rack travel in mm : 7.5...7.7
Del. quantity cm3/ : 0.9...1.5
100 s: (0.7...1.7)
Spread cm3 : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 700
Del. quantity : 84.5...85.5
1000 : (82.5...87.5)
Spread cm3 : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 99...107

Testing:
1st rack travel in: 11.10
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1225...1255

3rd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.00...7.20
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.10...12.20
2nd speed rpm : 500
Rack travel in m: 12.60...12.70
3rd speed rpm : 855
Rack travel in m: 12.40...12.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.90...12.00
3rd pressure hPa : 700
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del. quantity cm³/ : 87.0...89.0
1000 s: (84.5...91.5)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 64.5...65.5
1000 s: (62.5...67.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 115.0...125.0
1000 s: (112.0...128.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VMA 6,0 a
Edition : 21.09.92
Replaces : 01.90
Test oil : ISO-4113

Combination no. : 0 400 866 156

Injection pump
Pump designation : PES6A90D320/3RS2785
EP type number : 0 410 896 088
Governor
Governor design. : RSV350...1300A2C2242
R
Governor no. : 0 420 233 259

Customer-spec. information
Customer : VM

Engine : SUN 6105 UND ..T

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 9.4...9.5

100 s: (9.2...9.7)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 7.2...7.4

Del.quantity cm³/ : 1.2...1.8

100 s: (1.0...2.0)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 94.5...95.5

1000 : (92.5...97.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 11.00

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1385...1415

3rd rack travel in: 4.00

Speed rpm : 1415...1445

4th rack travel in: 1580
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 12.00...12.10
2nd speed rpm : 550
Rack travel in m: 12.10...12.20
5th speed rpm : 400
Rack travel in m: 13.20...13.80

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 11.01.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 866 179
Injection pump
Pump designation : PES6A100D320/3RS2591
EP type number : 9 410 230 025
Governor
Governor design. : RSV550...1100AOC2238
-2R
Governor no. : 0 420 233 296

Customer-spec. information
Customer : C.D.C.

Engine : 6CTA-830

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.3...12.5

100 s: (12.1...12.7)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 550.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 123.0...125.0

1000 : (121.0...127.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.70
Speed rpm : 1165...1175
2nd rack travel in: 4.00
Speed rpm : 1225...1235
3rd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position: degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 550
Rack travel in mm : 5.60...5.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 340
Rack travel in m: 11.20...11.30
3rd pressure hPa : 465
Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 80.0...82.0
1000 s: (78.0...84.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1165...1175

H22

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: C.D.C. # 3923479

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL 3,3 b
Edition : 21.09.92
Replaces : 03.91
Test oil : ISO-4113

Combination no. : 0 400 873 040

Injection pump
Pump designation : PES3A95D32ORS2810
EP type number : 0 410 893 997
Governor
Governor design. : RSV375...1175A2C2178
-10R
Governor no. : 0 420 233 281.

Customer-spec. information
Customer : VALMET

Engine : 320 DS

1st version kW : 55.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 0.8...1.5

100 s: (0.5...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Del.quantity : 85.5...87.5

1000 : (83.5...89.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 97...106

Testing:

1st rack travel in: 9.70
Speed rpm : 1215...1225
2nd rack travel in: 4.00
Speed rpm : 1270...1300
3rd rack travel in: 4.00
Speed rpm : 1275...1305
4th rack travel in: 1440
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 3.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 375
Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00
Speed rpm : 420...480

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 10.70...10.80
2nd speed rpm : 500
Rack travel in m: 11.30...11.40
4th speed rpm : 990
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 73.5...76.5
1000 s: (71.0...79.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...210.0
1000 s: (197.0...213.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 4.20...4.40
Del.quantity cm³/ : 8.0...15.0
1000 s: (5.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a
Edition : 27.11.92
Replaces : 05.92
Test oil : ISO-4113

Combination no. : 0 400 874 238

Injection pump
Pump designation : PES4A95D410RS2685
EP type number : 0 410 894 996
Governor
Governor design. : RSV400...1000A1C2187
L
Governor no. : 0 420 232 387

Customer-spec. information
Customer : LIEBHERR

Engine : D904 NA

1st version kW : 90.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
: (2.65...2.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference * CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 415.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Del.quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 11.20
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1035...1065
3rd rack travel in: 4.00
Speed rpm : 1075...1095
4th rack travel in: 1230
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 415
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 415
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 12.20...12.30
2nd speed rpm : 500
Rack travel in m: 12.20...12.40

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 415
Rack travel in mm : 6.60...6.80
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a15
 Edition : 27.11.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 400 874 238R
 Injection pump
 Pump designation : PES4A95D41ORS2685
 EP type number : 0 410 894 996
 Governor
 Governor design. : RSV400...1000A1C2187
 L
 Governor no. : 0 420 232 387

Customer-spec. information
 Customer : LIEBHERR

Engine : D904 T

1st version kW : 90.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 415.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Del.quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 11.20
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1035...1065
3rd rack travel in: 4.00
Speed rpm : 1075...1095
4th rack travel in: 1230
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 415
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 415
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 975
Rack travel in m: 12.20...12.30
2nd speed rpm : 500
Rack travel in m: 12.80...13.00
3rd speed rpm : 800
Rack travel in m: 12.80...13.00
4th speed rpm : 900
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 114.0...120.0
1000 s: (111.5...122.5)
Speed rpm : 800
Del.quantity cm3/ : 125.5...128.5
1000 s: (123.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100

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Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 415
Rack travel in mm : 6.60...6.80
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL 4.4 c
 Edition : 21.09.92
 Replaces : 02.91
 Test oil : ISO-4113
 Combination no. : 0 400 874 250
 Injection pump
 Pump designation : PES4A95D320RS2807
 EP type number : 0 410 894 994
 Governor
 Governor design. : RSV375...1125A2C2178
 -7R
 Governor no. : 0 420 233 279

Customer-spec. information
 Customer : VALMET

Engine : 420 DS

1st version kw : 75.0
 Rated speed : 2250

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 4- 3

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1125

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.8...2.4

100 s: (1.5...2.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1125

Del.quantity : 86.5...88.5

1000 : (84.5...90.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 97...105

Testing:

1st rack travel in: 10.20
Speed rpm : 1165...1175
2nd rack travel in: 4.00
Speed rpm : 1235...1265
3rd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 375
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 465...525

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1125
Rack travel in m: 11.20...11.30
2nd speed rpm : 500
Rack travel in m: 11.50...11.60
4th speed rpm : 965
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 195.0...205.0
1000 s: (192.0...208.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 18.0...24.0
1000 s: (15.5...26.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 m 10
 Edition : 27.11.92
 Replaces : 09.92
 Test oil : ISO-4113

Combination no. : 0 400 876 188

Injection pump
 Pump designation : PES6A80D410RS2085X
 EP type number : 0 410 886 045
 Governor
 Governor design. : RSV350...1400A2C1052
 L
 Governor no. : 0 420 232 406

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM352

1st version kW : 80.9
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.00...9.10

Del. quantity cm³/ : 5.2...5.3

100 s : (5.0...5.4)

Spread cm³ : 0.2

100 s : (0.4)

2nd speed rpm : 350.0
 Rack travel in mm : 6.4...7.0
 Del. quantity cm³/ : 1.0...1.2
 100 s : (0.8...1.3)

Spread cm³ : 0.2
 100 s : (0.3)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del. quantity : 52.0...53.0
 1000 : (50.5...54.5)

Spread cm³ : 2.50
 1000 : (4.00)

RATED SPEED

1st version
 Control lever
 position degrees: 108...116

Testing:
 1st rack travel in: 8.00
 Speed rpm : 1450...1455
 2nd rack travel in: 4.00
 Speed rpm : 1488...1501
 3rd rack travel in: 4.00
 Speed rpm : 1515...1545

4th rack travel in: 1680
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 54...62
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 500...560

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.00...9.10
2nd speed rpm : 500
Rack travel in m: 9.90...10.00
3rd speed rpm : 850
Rack travel in m: 9.50...9.70
4th speed rpm : 950
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 47.0...49.0
1000 s: (45.0...51.0)
Speed rpm : 850
Del.quantity cm3/ : 48.5...51.5
1000 s: (46.5...53.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.00
Speed rpm : 1450...1455

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.20...14.60

LOW IDLE

Speed rpm : 350

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Rack travel in mm : 6.40...7.00
Del.quantity cm3/ : 10.0...12.0
1000 s: (8.5...13.5)
Spread cm3 : 2.00
1000 s: (3.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 k 1
 Edition : 31.07.92
 Replaces : 9.85
 Test oil : ISO-4113
 Combination no. : 0 400 876 198
 Injection pump
 Pump designation : PES6A95D410RS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RSV300...1150A8C616
 DL
 Governor no. : 0 420 232 323

Customer-spec. information
 Customer : KHD

Engine : F6L413FR

1st version kW : 140.0
 Rated speed : 2300
 2nd version kW : 106.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1140

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1140

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

2nd version

Speed rpm : 1140

Del.quantity cm3/ : 76.0...77.0

1000 s: (74.0...79.0)

Spread cm3 : 3.0

1000 s: (6.0)

RATED SPEED

1st version

Control lever
position degrees: 104...112

Testing:
1st rack travel in: 9.00
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1215...1245
3rd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1410
Speed rpm : 0.30...1.40

2nd version
Control lever
position degrees: 51...59

Testing:
1st rack travel in: 7.20
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1325
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1140
Rack travel in m: 10.00...10.10
2nd speed rpm : 500
Rack travel in m: 10.40...10.50
4th speed rpm : 750
Rack travel in m: 10.20...10.30

Torque control curve - 2nd version
1st speed rpm : 1140
Rack travel in m: 8.20...8.30
2nd speed rpm : 500
Rack travel in m: 9.10...9.20
3rd speed rpm : 750
Rack travel in m: 8.90...9.10
4th speed rpm : 900
Rack travel in m: 8.40...8.60

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 93.5...96.5
1000 s: (91.0...99.0)

2nd version
Speed rpm : -
Del.quantity cm3/ : -
1000 s: -
Spread cm3 : -
1000 s: -

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.00
Speed rpm : 1180...1190

2nd version
1mm rack travel less than
full load rack tr: 7.20
Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.80...16.20

Speed rpm : 100
Del.quantity cm3/ : 111.5...121.5
1000 s: (108.5...124.5)
Rack travel in mm : 13.6...14.0

Remarks:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 K 2
 Edition : 31.07.92
 Replaces : 03.87
 Test oil : ISO-4113
 Combination no. : 0 400 876 199
 Injection pump
 Pump designation : PES6A95D410RS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RSV300...750A7C616L
 Governor no. : 0 420 232 322

Customer-spec. information
 Customer : KHD

Engine : F6L413FR

1st version kW : 110.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.95...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 76.0...77.0

1000 : (74.0...79.0)

Spread cm3 : 3.00

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Testing:

1st rack travel in: 8.20

Speed rpm : 780...790

2nd rack travel in: 4.00

Speed rpm : 790...820

4th rack travel in: 930

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 69...77

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 9.20...9.30

2nd speed rpm : 600

Rack travel in m: 9.80...9.90

3rd speed rpm : 350

Rack travel in m: 9.90...10.30

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.20

Speed rpm : 780...790

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 111.5...121.5

1000 s: (108.5...124.5)

Rack travel in mm : 13.50...14.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 18.12.91
Replaces : 9.76
Test oil : ISO-4113
Combination no. : 0 400 876 247
Injection pump
Pump designation : PES6A95D410RS2500
EP type number : 0 410 896 946
Governor
Governor design. : RSV400...1100A7B772L
Governor no. : 0 420 232 209

Customer-spec. information
Customer : JOHN DEERE

Engine : 6404 T

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : W 187 000 000
Inlet press., bar : 1.50
Test nozzle holder
assembly : 0 681 343 009
Opening
pressure, bar : 172...175
Test lines : 1 680 750 008
Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600
(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080
Rack travel in mm : 10.00...10.10
Del.quantity cm3/ : 8.5...8.7
100 s : (8.3...8.9)
Spread cm3 : 0.3
2nd speed rpm : 400.0
Rack travel in mm : 5.9...6.1
Del.quantity cm3/ : 1.2...1.7
100 s : (0.9...1.9)
Spread cm3 : 0.3

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1080
Del.quantity : 85.5...87.5
1000 : (83.5...89.5)
Spread cm3 : 3.00

RATED SPEED

1st version
Control lever
position degrees: 66...74

Testing:
1st rack travel in: 9.00
Speed rpm : 1110...1120
2nd rack travel in: 5.00
Speed rpm : 1135...1140
4th rack travel in: 1250
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 400

Rack travel in mm : 5.5

delivery of cylinder 1

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 510...570
Speed rpm : 650
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.00...10.10
2nd speed rpm : 400
Rack travel in m: 10.00...10.20
3rd speed rpm : 300
Rack travel in m: 10.70...11.30

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 156.5...176.5
1000 s: (153.5...179.5)
Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version
Speed rpm : 1150
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 14.0...20.0
1000 s: (13.0...21.0)
Spread cm3 : 4.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 12.0...17.0
1000 s: (9.5...19.5)
Spread cm3 : 3.00

Remarks:

:

Start-of-delivery mark at 14° angular
displacement of the cam after start of

J10

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 18.12.91
Replaces : 9.76
Test oil : ISO-4113

Combination no. : 0 400 876 248

Injection pump
Pump designation : PES6A95D410RS2500
EP type number : 0 410 896 946
Governor
Governor design. : RSV400...1200A2B773D
Governor no. : 0 420 234 349

Customer-spec. information
Customer : JOHN DEERE

Engine : 6404 T

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: W 187 000 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 1.90...2.00
: (1.85...2.05)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.70...9.80

Del.quantity cm3/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm3 : 0.3

2nd speed rpm : 400.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.2...1.7

100 s: (0.9...1.9)

Spread cm3 : 0.3

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 85.5...87.5

1000 : (83.5...89.5)

Spread cm3 : 3.00

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 8.70

Speed rpm : 1240...1250

2nd rack travel in: 5.00

Speed rpm : 1280...1285

4th rack travel in: 1450

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 15...23

Setting point w/out bumper spring

Speed rpm : 400
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 580...640
Speed rpm : 750
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 9.70...9.80
2nd speed rpm : 800
Rack travel in m: 10.30...10.40
3rd speed rpm : 600
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 92.0...95.0
1000 s: (89.5...97.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 156.5...176.5
1000 s: (153.5...179.5)
Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

Speed rpm : 1295
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 21.0...27.0
1000 s: (20.0...28.0)
Spread cm3 : 4.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.70...5.90

Del.quantity cm3/ : 12.0...17.0
1000 s: (9.5...19.5)
Spread cm3 : 3.00

Remarks:

:
Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 6,6 h 2
Edition : 18.12.91
Replaces : 08.89
Test oil : ISO-4113

Combination no. : 0 400 876 249

Injection pump

Pump designation : PES6A95D410RS2500
EP type number : 0 410 896 946
Governor
Governor design. : RSV600...1100A2B774L
Governor no. : 0 420 232 210

Customer spec. information

Customer : JOHN DEERE

Engine : 6404 T

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: W 187 000 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 1.90...2.00
: (1.85...2.05)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 7.9...8.1

100 s : (7.7...8.3)

Spread cm3 : 0.3

2nd speed rpm : 600.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.2...1.7

100 s : (0.9...1.9)

Spread cm3 : 0.3

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 79.5...81.5

1000 : (77.5...83.5)

Spread cm3 : 3.00

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 8.80

Speed rpm : 1140...1150

2nd rack travel in: 5.00

Speed rpm : 1165...1170

4th rack travel in: 1300

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 600
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 600
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 670...730
Speed rpm : 850
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.80...9.90
2nd speed rpm : 500
Rack travel in m: 9.80...10.00
3rd speed rpm : 400
Rack travel in m: 10.50...11.10

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.80
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 156.5...176.5
1000 s: (153.5...179.5)
Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version
Speed rpm : 1200
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 21.0...27.0
1000 s: (20.0...28.0)
Spread cm3 : 4.00
1000 s: (-)

LOW IDLE

Speed rpm : 600
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 12.0...17.0
1000 s: (9.5...19.5)
Spread cm3 : 3.00
1000 s: (-)

Remarks:

:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 j 3
 Edition : 11.01.93
 Replaces : 07.91
 Test oil : ISO-4113
 Combination no. : 0 400 876 388
 Injection pump
 Pump designation : PES6A95D410RS2797
 EP type number : 0 410 896 900
 Governor
 Governor design. : RSV350...1200A1C1154
 -2L
 Governor no. : 0 420 232 561

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 81.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 5.4...5.6

100 s: (5.2...5.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 9.4...10.0

Del.quantity cm3/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 54.5...56.5

1000 : (52.5...58.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.80

Speed rpm : 1240...1245

2nd rack travel in: 4.00

Speed rpm : 1263...1280

3rd rack travel in: 4.00

Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.30...1.40
5th rack travel in: 1255...1265
Speed rpm : 8.80

Unimog

LOW IDLE 1

Control lever

position degrees: -3

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 9.70

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 350

Rack travel in mm : 9.40...10.00

Rack travel in mm : 2.00

Speed rpm : 495...555

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 9.80...9.90

2nd speed rpm : 500

Rack travel in m: 11.10...11.30

3rd speed rpm : 850

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm³/ : 48.0...51.0

1000 s: (45.5...53.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 80.0...90.0

1000 s: (77.0...93.0)

Rack travel in mm : 15.50...15.90

Remarks:

:

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : AIF
Edition : 18.12.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 400 876 393

Injection pump
Pump designation : PES6A90D410RS2723
EP type number : 0 410 896 085
Governor
Governor design. : RSV300...1350A0C2257
L
Governor no. : 0 420 232 568

Customer-spec. information
Customer : IVECO-AIFO

Engine : 8061.3RM 25

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30
: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 13.60...13.70

Del.quantity cm³/ : 10.9...11.0

100 s: (10.7...11.2)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 9.0...9.2

Del.quantity cm³/ : 2.3...2.7

100 s: (2.1...2.9)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Del.quantity : 109.0...110.0

1000 : (107.0...112.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 12.70

Speed rpm : 1390...1400

2nd rack travel in: 4.00

Speed rpm : 1595...1625

4th rack travel in: 1700

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1350

Rack travel in m: 13.60...13.70

2nd speed rpm : 500

Rack travel in m: 13.60...13.80

5th speed rpm : 350

Rack travel in m: 15.10...15.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm³/ : 97.0...99.0

1000 s: (94.5...101.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 17.20...17.60

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
Edition : 03.02.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 404
Injection pump
Pump designation : PES6A95D410RS2835
EP type number : 0 410 896 896
Governor
Governor design. : RSV650...1050A8C2263
L
Governor no. : 0 420 232 583

Customer-spec. information
Customer : FNM-GEOTECH

Engine : 7.5 L

1st version kW : 149.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65
: (2.50...2.70)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.00...13.20

Del.quantity cm3/ : 12.3...12.7

100 s: (12.0...12.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 650.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 2.1...2.5
100 s: (1.9...2.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 123.0...127.0

1000 : (120.5...129.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 12.00

Speed rpm : 1093...1098
2nd rack travel in: 4.00
Speed rpm : 1128...1143
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 650
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 670...730

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.00...13.20
2nd speed rpm : 750
Rack travel in m: 14.40...14.60
3rd speed rpm : 975
Rack travel in m: 13.50...13.80
4th speed rpm : 1050
Rack travel in m: 12.50...12.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.40...14.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 550
Rack travel in m: 13.50...13.60
3rd pressure hPa : 325
Rack travel in m: 10.50...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 150.5...152.5
1000 s: (148.5...154.5)

Spread cm³ : 3.50
1000 s: (6.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 75.0...79.0
1000 s: (72.5...81.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1093...1098

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (187.0...213.0)

LOW IDLE

Speed rpm : 650
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 21.5...25.5
1000 s: (19.0...28.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Hydraulic latching of starting
delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
Edition : 22.01.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 876 405

Injection pump
Pump designation : PES6A95D410RS2835
EP type number : 0 410 896 896
Governor
Governor design. : RSV400...1050A2C2263
-1L
Governor no. : 0 420 232 584

Customer-spec. information
Customer : FMH-GEOTECH

Engine : 7.5 L-8640 Trak

1st version kW : 131.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65
: (2.50...2.70)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.10...12.30

Del.quantity cm3/ : 11.1...11.5

100 s: (10.8...11.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 111.0...115.0

1000 : (108.5...117.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 11.20

Speed rpm : 1093...1098
2nd rack travel in: 4.00
Speed rpm : 1163...1178
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 400
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.10...12.30
2nd speed rpm : 750
Rack travel in m: 14.00...14.20
3rd speed rpm : 925
Rack travel in m: 13.10...13.40
4th speed rpm : 1050
Rack travel in m: 11.60...11.80

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.20
2nd pressure hPa : 900
Rack travel in m: 13.50...13.60
3rd pressure hPa : 600
Rack travel in m: 11.60...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 140.0...142.0
1000 s: (138.0...144.0)

Spread cm3 : 3.50
1000 s: (6.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 89.0...91.0
1000 s: (86.5...93.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1093...1098

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 185.0...205.0
1000 s: (182.0...208.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Hydraulic latching of starting
delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
Edition : 03.02.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 406
Injection pump
Pump designation : PES6A95D410RS2835
EP type number : 0 410 896 896
Governor
Governor design. : RSV400...1050A2C2263
-2L
Governor no. : 0 420 232 585

Customer-spec. information
Customer : FNN-GEOTECH

Engine : 7.5 L-8740 Trak

1st version kw : 142.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65
: (2.50...2.70)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 13.40...13.50
Del.quantity cm³/ : 13.0...13.4
100 s: (12.7...13.6)
Spread cm³ : 0.3
100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.2...5.5
Del.quantity cm³/ : 1.3...1.7
100 s: (1.0...1.9)
Spread cm³ : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1200
Del.quantity : 130.0...134.0
1000 : (127.5...136.5)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 92...100

Testing:
1st rack travel in: 12.40

Speed rpm : 1093...1098
2nd rack travel in: 4.00
Speed rpm : 1163...1178
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 400
Rack travel in mm : 5.20...5.50
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.40...13.50
2nd speed rpm : 650
Rack travel in m: 15.00...15.20
3rd speed rpm : 900
Rack travel in m: 14.10...14.50
4th speed rpm : 1050
Rack travel in m: 12.90...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.80
2nd pressure hPa : 900
Rack travel in m: 14.00...14.10
3rd pressure hPa : 650
Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 164.0...166.0
1000 s: (162.0...168.0)

Spread cm³ : 3.50
1000 s: (-)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 99.0...101.0
1000 s: (96.5...103.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1093...1098

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 185.0...205.0
1000 s: (182.0...208.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.50
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Hydraulic latching of starting
delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
 Edition : 03.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 407
 Injection pump
 Pump designation : PES6A95D410RS2835
 EP type number : 0 410 896 896
 Governor
 Governor design. : RSV650...1050A8C2263
 -3L
 Governor no. : 0 420 232 586

Customer-spec. information
 Customer : FNH-GEOTECH

Engine : 7.5 L

1st version kW : 138.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65
 : (2.50...2.70)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.70...12.90

Del.quantity cm3/ : 11.8...12.2

100 s: (11.5...12.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 650.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 2.0...2.4

100 s: (1.8...2.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 118.0...122.0

1000 : (115.5...124.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 97...105

Testing:

1st rack travel in: 11.80

Speed rpm : 1093...1098
2nd rack travel in: 4.00
Speed rpm : 1128...1143
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 650
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 750...810

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.70...12.90
2nd speed rpm : 750
Rack travel in m: 13.90...14.10
3rd speed rpm : 975
Rack travel in m: 13.20...13.50
4th speed rpm : 1050
Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.10
2nd pressure hPa : 550
Rack travel in m: 13.40...13.50
3rd pressure hPa : 325
Rack travel in m: 11.10...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 750
Del.quantity cm3/ : 140.0...142.0
1000 s: (138.0...144.0)

Spread cm3 : 3.50
1000 s: (6.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 75.0...79.0
1000 s: (72.5...81.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1093...1098

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 187.0...207.0
1000 s: (187.0...213.0)

LOW IDLE

Speed rpm : 650
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 20.0...24.0
1000 s: (18.5...25.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Hydraulic latching of starting
delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 11.01.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 412
Injection pump
Pump designation : PES6A100D410RS2762-1
EP type number : 0 410 806 008
Governor
Governor design. : RSV450...1100A0C2252
-3L
Governor no. : 0 420 232 592

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076TDW 30

1st version kW : 120.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 9.90
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1210
3rd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 450
Rack travel in mm : 5.20...5.40

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.90...11.00
2nd speed rpm : 500
Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 136.5...140.5
1000 s: (134.5...142.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 450
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 19.0...23.0
1000 s: (16.5...25.5)

Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE54248

Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 11.01.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 413
Injection pump
Pump designation : PES6A85D41ORS2761-1
EP type number : 0 410 886 894
Governor
Governor design. : RSV325...1150A8C673-2L
Governor no. : 0 420 232 519

Customer-spec. information
Customer : KHD

Engine : BF6L913

1st version kw : 112.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.10...12.20

Del.quantity cm³/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.5...7.7

Del.quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control Lever

position degrees: 100...108

Testing:

1st rack travel in: 11.10

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1225...1255

3rd rack travel in: 4.00

Speed rpm : 1240...1270
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.00...7.20
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.10...12.20
2nd speed rpm : 500
Rack travel in m: 12.70...12.80
3rd speed rpm : 855
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 87.0...89.0
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 17.00...17.40

Remarks:

: ORENSTEIN + KOPPEL

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 11.01.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 414
Injection pump
Pump designation : PES6A85D41ORS2761-1
EP type number : 0 410 886 894
Governor
Governor design. : RSV325...1150A8C574-1L
Governor no. : 0 420 232 518
Customer-spec. information
Customer : KHD
Engine : BF6L913
1st version kW : 112.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 000
Inlet press., bar : 1.50
Test nozzle holder
assembly : 0 681 343 009
Opening
pressure, bar : 172...175
Test lines : 1 680 750 014
Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 2.50...2.60
: (2.45...2.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 12.10...12.20
Del.quantity cm³/ : 8.4...8.5
100 s: (8.2...8.7)
Spread cm³ : 0.3
100 s: (0.5)
2nd speed rpm : 325.0
Rack travel in mm : 7.5...7.7
Del.quantity cm³/ : 0.9...1.5
100 s: (0.7...1.7)
Spread cm³ : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 700
Del.quantity : 84.5...85.5
1000 : (82.5...87.5)
Spread cm³ : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 100...108

Testing:
1st rack travel in: 11.10
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1225...1255

3rd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.10...12.20
2nd speed rpm : 500
Rack travel in m: 12.70...12.80
3rd speed rpm : 855
Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.90...12.00
3rd pressure hPa : 700
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 87.0...89.0
1000 s: (84.5...91.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 64.5...65.5
1000 s: (62.5...67.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD 19,2 b2
Edition : 11.01.93
Replaces : 09.91
Test oil : ISO-4113

Combination no. : 0 401 840 763

Injection pump
Pump designation : PE12P110A920LS3173
EP type number : 0 411 810 708
Governor
Governor design. : RQ300/1000PA8G3-1
Governor no. : 0 421 801 463

Customer-spec. information
Customer : KHD

Engine : BF12L513/C

1st version kW : 342.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 9- 8- 5- 2-

K05

Phasing : 0-15-60-75-120-135-
180-195-240-255-300-
315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.90...13.00

Del. quantity cm³/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm³ : 0.5

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 6.8...7.0

Del. quantity cm³/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm³ : 0.7

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm³ : 5.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.90

Speed rpm : 1035...1050

2nd rack travel in: 4.00

Speed rpm : 1105...1135

4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.9

Testing:

Speed rpm : 100
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.90...13.00
2nd speed rpm : 650
Rack travel in m: 13.20...13.40

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1035...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...165.0
1000 s: (131.0...169.0)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 j
Edition : 03.12.92
Replaces : 02.89
Test oil : ISO-4113
Combination no. : 0 401 846 849
Injection pump
Pump designation : PE6P120A320RS3196
EP type number : 0 411 826 763
Governor
Governor design. : RQV200...1100PA729-1
Governor no. : 0 421 813 470

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DS9 06

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

K07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 13.3...13.5

100 s: (13.0...13.8)

Spread cm3 : 0.5

100 s: (0.8)

2nd speed rpm : 225.0

Rack travel in mm : 4.7...5.3

Del.quantity cm3/ : 2.2...2.6

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
travel mm : 0.50...0.90

2nd speed rpm : 350
travel mm : 2.00...2.60

3rd speed rpm : 650
travel mm : 4.90...5.50

4th speed rpm : 1145
travel mm : 8.30...8.50

5th speed rpm : 1250
travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 133.0...135.0

1000 : (130.0...138.0)

Spread cm3 : 5.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 9.40

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1250...1280

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 59...67

Testing:

Speed rpm : 100

Minimum rack travel: 6.20

Speed rpm : 225

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

Speed rpm : 300...360

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100

Del. quantity cm³/ : 145.0...153.0

1000 s: (143.0...155.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm³/ : 330.0...380.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225

Rack travel in mm : 4.60...4.80

Remarks:

:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with RCBG
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 i1
 Edition : 18.12.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 401 846 869
 Injection pump
 Pump designation : PE6P12GA32ORS3118
 EP type number : 0 411 826 726
 Governor
 Governor design. : RQV250...1100PA920-5
 Governor no. : 0 421 813 782

Customer-spec. information
 Customer : VOLVO

Engine : THD 102 KD

1st version kW : 250.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 22.2...22.4

100 s: (21.9...22.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.4...4.6

Del.quantity cm3/ : 2.9...3.4

100 s: (2.7...3.7)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.10...1.30

2nd speed rpm : 500
 travel mm : 4.10...4.90

3rd speed rpm : 700
 travel mm : 6.30...6.70

4th speed rpm : 950
 travel mm : 6.30...6.70

5th speed rpm : 1100
 travel mm : 7.00...7.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 222.0...224.0
1000 : (219.0...227.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 11.70
Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

Speed rpm : 250...420

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.40...8.60
2nd pressure hPa : 160
Rack travel in m: 8.60...8.70
3rd pressure hPa : 850
Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 230.0...270.0
1000 s: (226.0...274.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.40...4.60
Del.quantity cm3/ : 29.5...34.5
1000 s: (27.0...37.0)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p 4
Edition : 27.11.92
Replaces : 07.91
Test oil : ISO-4113
Combination no. : 0 401 846 898
Injection pump
Pump designation : PE6P110A72ORS3225
EP type number : 0 411 816 763
Governor
Governor design. : RQV275...1200PA910
Governor no. : 0 421 813 746

Customer-spec. information
Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 450

travel mm : 2.90...3.30

3rd speed rpm : 800

travel mm : 4.70...5.10

4th speed rpm : 1200

travel mm : 7.80...8.00

5th speed rpm : 1500

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1235

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 124.0...126.0

1000 : (122.0...128.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 11.50
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1345...1375
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 275
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 280...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.90...11.00
2nd pressure hPa : 360
Rack travel in m: 12.10...12.20
3rd pressure hPa : 270
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 87.0...89.0
1000 s: (85.0...91.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1240...1250

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.70...4.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
Edition : 23.10.91
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 846 926
Injection pump
Pump designation : PE6P110A720RS3040-2
EP type number : 0 411 816 774
Governor
Governor design. : RQV200...1000PA555-4
Governor no. : 0 421 813 878

Customer-spec. information
Customer : SCANIA

Engine : DS11

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 104

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40
 : (3.25...3.45)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 17.2...17.4

100 s: (17.0...17.6)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.4...4.8

Del.quantity cm3/ : 1.7...2.1

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
travel mm : 1.10...1.50

2nd speed rpm : 350
travel mm : 2.30...2.90

3rd speed rpm : 700
travel mm : 4.70...5.30

4th speed rpm : 1050
travel mm : 8.40...8.60

5th speed rpm : 1165
travel mm : 9.90...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 172.0...174.0

1000 : (170.0...176.0)

Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 12.30
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 360...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.30...13.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.80...12.20
2nd pressure hPa : 405
Rack travel in m: 13.10...13.20
3rd pressure hPa : 290
Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm3/ : 165.0...173.0
1000 s: (163.0...175.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 138.0...140.0
1000 s: (135.0...143.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.40...4.60

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 5,9 b
Edition : 18.12.92
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 401 846 937

Injection pump
Pump designation : PE6P110A320RS3266
EP type number : 0 411 816 777
Governor
Governor design. : RQV300...1300PA996K
Governor no. : 0 421 815 277

Customer-spec. information
Customer : VOLVO-TRUCK

Engine : TD63ES

1st version kW : 155.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50
: (2.30...2.50)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 780

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 13.9...14.1

100 s: (13.7...14.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 330.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.4)

Spread cm3 : 0.7

100 s: (1.1)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 330
travel mm : 1.20...1.60

2nd speed rpm : 500
travel mm : 2.90...3.50

3rd speed rpm : 900
travel mm : 4.70...5.30

4th speed rpm : 1370
travel mm : 9.80...10.00

5th speed rpm : 1450
travel mm : 11.00...11.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1470

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 780

Aneroid pressure h: 1200

Del.quantity : 139.0...141.0
1000 : (137.0...145.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 11.20
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1520
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 330
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 330...600

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 780
Rack travel in m: 11.90...12.00
2nd speed rpm : 1300
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 1300
Pressure hPa : 1200
Rack travel mm : 12.20...12.40

Measurement

Speed 1/min : 1300

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 95
Rack travel in m: 8.70...8.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm3/ : 130.0...134.0
1000 s: (127.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 780
Del.quantity cm3/ : 73.0...75.0
1000 s: (70.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 65.0...85.0
1000 s: (61.0...89.0)
Rack travel in mm : 8.50...8.70

LOW IDLE

Speed rpm : 330
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.0...24.0)
Spread cm3 : 7.00
1000 s: (11.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEG 10,5 a
Edition : 27.11.92
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 401 846 947

Injection pump
Pump designation : PE6P110A720LS3283
EP type number : 0 411 816 786
Governor
Governor design. : RQV250...1000PA1011
Governor no. : 0 421 813 937

Customer-spec. information
Customer : IVECO-PEGASO

Engine : 95 T1 GX

1st version kW : 165.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 10.80...10.90

Del.quantity cm³/ : 17.2...17.4

100 s: (16.9...17.7)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del.quantity cm³/ : 1.8...2.2

100 s: (1.6...2.4)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.40

2nd speed rpm : 400
travel mm : 2.20...2.80

3rd speed rpm : 650
travel mm : 4.50...5.10

4th speed rpm : 1050
travel mm : 8.50...8.70

5th speed rpm : 1140
travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 172.0...174.0

1000 : (169.0...177.0)

Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 9.80
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 81...89

Testing:
Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 250
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION
Speed rpm : 250...480

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.80...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.00...8.30
2nd pressure hPa : 520
Rack travel in m: 10.10...10.20
3rd pressure hPa : 310
Rack travel in m: 8.80...9.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 980
Del.quantity cm3/ : 174.0...178.0
1000 s: (171.0...181.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 117.0...119.0
1000 s: (114.0...122.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.60...6.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
Edition : 27.11.92
Replaces : 10.92
Test oil : ISO-4113

Combination no. : 0 401 846 956

Injection pump
Pump designation : PE6P120A320RS3196
EP type number : 0 411 826 763
Governor
Governor design. : RGV200...1100PA729-4
Governor no. : 0 421 813 950

Customer-spec. information
Customer : SCANIA

Engine : D5C9 10

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 104

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 13.2...13.4
100 s: (12.9...13.7)

Spread cm³ : 0.8
100 s: (1.2)

2nd speed rpm : 250.0
Rack travel in mm : 4.6...5.0
Del. quantity cm³/ : 1.2...1.6
100 s: (-)
Spread cm³ : 0.4
100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.70...1.10
2nd speed rpm : 350
travel mm : 2.00...2.60
3rd speed rpm : 650
travel mm : 4.90...5.50
4th speed rpm : 1145
travel mm : 8.30...8.50
5th speed rpm : 1250
travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1120
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del. quantity : 132.0...134.0
1000 : (129.0...137.0)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 9.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 56...66

Testing:
Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 320...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.50...10.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.20
2nd pressure hPa : 350
Rack travel in m: 10.20...10.30
3rd pressure hPa : 320
Rack travel in m: 10.00...10.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1100
Del.quantity cm³/ : 128.0...136.0
1000 s: (126.0...138.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 114.0...118.0
1000 s: (112.0...120.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 110.0...130.0
1000 s: (-)
Rack travel in mm : 9.80...10.20

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 i
Edition : 11.06.92
Replaces : 18.09.91
Test oil : ISO-4113

Combination no. : 0 401 846 958

Injection pump
Pump designation : PE6P120A720RS3291
EP type number : 0 411 826 800
Governor
Governor design. : RQV300...1000PA1016
Governor no. : G 421 813 964

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8210.22.521

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 22.5...22.7

100 s : (22.2...23.0)

Spread cm3 : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 3.8...4.2

Del.quantity cm3/ : 1.9...2.5

100 s : (1.6...2.8)

Spread cm3 : 0.8

100 s : (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

travel mm : 7.70...7.90

2nd speed rpm : 300

travel mm : 1.10...1.50

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 700

travel mm : 4.30...4.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1145

Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 10.00
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 57...65

Testing:
Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION
Speed rpm : 300...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 220
Rack travel in m: 10.30...10.40
3rd pressure hPa : 180
Rack travel in m: 9.20...9.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm3/ : 224.0...228.0
1000 s: (221.0...231.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 155.0...157.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.80...4.20
Del.quantity cm3/ : 19.0...25.0
1000 s: (16.0...28.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,2 c
Edition : 18.12.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 401 846 960

Injection pump
Pump designation : PE6P110A320RS3265
EP type number : 0 411 816 778
Governor
Governor design. : RQV300...1100PA1019K
Governor no. : 0 421 815 290

Customer-spec. information
Customer : VME

Engine : TD102KTE

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 16.8...17.0

100 s: (16.6...17.2)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 2.5...2.9

100 s: (2.3...3.1)

Spread cm³ : 0.3

100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 0.90...1.30

2nd speed rpm : 500
travel mm : 3.00...3.60

3rd speed rpm : 900
travel mm : 7.30...7.70

4th speed rpm : 1150
travel mm : 8.90...9.10

5th speed rpm : 1260
travel mm : 10.80...11.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1500

Del.quantity : 168.0...170.0

1000 : (166.0...172.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 12.40
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 67...75

Testing:
Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 300
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION
Speed rpm : 300...460

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 13.40...13.50
2nd speed rpm : 600
Rack travel in m: 13.10...13.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1100
Pressure hPa : 1500
Rack travel mm : 13.40...13.50

Measurement
Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 90
Rack travel in m: 10.20...10.30
3rd pressure hPa : 170
Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 600
Del.quantity cm3/ : 174.0...178.0
1000 s: (172.0...180.0)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 116.0...118.0
1000 s: (113.0...121.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...170.0
1000 s: (136.0...174.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 25.0...29.0
1000 s: (23.0...31.0)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 27.11.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 401 846 964
 Injection pump
 Pump designation : PE6P110A32ORS3302
 EP type number : 0 411 816 787
 Governor
 Governor design. : RQ300/1000PA1012-1
 Governor no. : 0 421 801 648

Customer-spec. information
 Customer : DAF

Engine : LT 195 L

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 14.00...15.00

K25

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10
 & maximum rack tra: 13.9...14.9
 Difference ° CS : 3.00...5.00

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 17.3...17.5

100 s: (17.0...17.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.6...2.1

100 s: (1.4...2.4)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 173.0...175.0

1000 : (170.5...177.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40
Speed rpm : 1025...1040
2nd rack travel in: 4.00
Speed rpm : 1105...1135
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 15.10...15.20
2nd speed rpm : 1000
Rack travel in m: 15.00...15.20

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.40...14.50

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 530
Rack travel in m: 14.00...14.10
3rd pressure hPa : 380
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.5...135.5)

BREAKAWAY

1st version

K26

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1025...1040

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 330.0...370.0
1000 s: (327.0...373.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 16.5...21.5
1000 s: (14.0...24.0)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 401 846 968
 Injection pump
 Pump designation : PE6P110A320RS3197
 EP type number : 0 411 816 752
 Governor
 Governor design. : RQV300...1100PA589-4
 Governor no. : 0 421 814 022

Customer-spec. information
 Customer : VME

Engine : 1D102 KF

1st version kW : 200.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00

K27

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 16.7...16.9

100 s: (16.4...17.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.8

Del.quantity cm3/ : 2.5...2.9

100 s: (2.2...3.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 350
 travel mm : 2.20...2.70

3rd speed rpm : 450
 travel mm : 3.70...4.10

4th speed rpm : 750
 travel mm : 6.30...6.70

5th speed rpm : 1160
 travel mm : 7.90...8.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 167.0...169.0

1000 : (164.0...172.0)

Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 10.90
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 60...68

Testing:

Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 300
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 200
Rack travel in m: 10.10...10.20
3rd pressure hPa : 440
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 127.0...129.0
1000 s: (124.0...132.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...190.0
1000 s: (156.0...194.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.30...4.50

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 21.01.93
Replaces : 10.92
Test oil : ISO-4113
Combination no. : 0 401 846 969
Injection pump
Pump designation : PE6P110A320RS3312
EP type number : 0 411 816 788
Governor
Governor design. : RQ300/1000FA1012-1
Governor no. : 0 421 801 648

Customer-spec. information
Customer : DAF

Engine : LT 160 L

1st version kW : 160.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 089

Outside diameter
x Wall thickness : 8.00x2.50x600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 13.00...14.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70
& maximum rack tra: 12.5...13.5
Difference ° CS : 4.00...6.00

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 14.1...14.3

100 s: (13.8...14.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 2.7...3.2

100 s: (2.5...3.5)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 141.0...143.0

1000 : (138.5...145.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00
Speed rpm : 1042...1052

2nd rack travel in: 4.00
Speed rpm : 1110...1140

4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 200

Minimum rack travel: 9.90

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 14.10...14.20

2nd speed rpm : 1000

Rack travel in m: 14.00...14.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1000

Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 11.60...11.80

2nd pressure hPa : 360

Rack travel in m: 12.70...12.80

3rd pressure hPa : 270

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 108.5...110.5

1000 s: (106.0...113.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1042...1052

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 330.0...370.0

1000 s: (327.0...373.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Del.quantity cm3/ : 27.5...32.5

1000 s: (25.0...35.0)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 x
Edition : 05.10.92
Replaces : 04.91
Test oil : ISO-4113

Combination no. : 0 401 848 792

Injection pump
Pump designation : PE8P120A920/5LS3208
EP type number : 0 411 828 721
Governor
Governor design. : RQ325/1150PA879
Governor no. : 0 421 801 417

Customer-spec. information
Customer : KHD

Engine : BF8L513CP

1st version kW : 294.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness : 6.00X1.50X1000
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.40...3.50
: (3.35...3.55)
Rack travel in mm : 15.00...19.00
Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 18.9...19.1

100 s: (18.6...19.4)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 325.0
Rack travel in mm : 6.5...6.7
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.9
100 s: (1.3)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -7
Speed rpm : 700
Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 900
Del.quantity : 189.0...191.0
1000 : (186.0...194.0)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 700
Rack travel in mm : 15.5

Testing:

1st rack travel in: 11.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1260...1290
4th rack travel in: 14.00
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack travel: 8.10
Speed rpm : 325
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 400...440

CONSTANT REGULATION

Speed rpm : 300...510

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.30...12.40
2nd speed rpm : 600
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 900
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 400

1st pressure hPa : -

Rack travel in m: 10.20...10.40

2nd pressure hPa : 450

Rack travel in m: 11.00...11.10

3rd pressure hPa : 590

Rack travel in m: 12.00...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 400
Del.quantity cm³/ : 104.0...106.0
1000 s: (101.0...109.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 165.0...195.0
1000 s: (160.0...200.0)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 28.06.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 849 752

Injection pump
Pump designation : PE10P110A920/5LS3276
EP type number : 0 411 819 712
Governor
Governor design. : RQV350...1150PA997
Governor no. : 0 421 813 927

Customer spec. information
Customer : KHD

Engine : F 10L513

1st version kW : 223.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.10...3.20
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-
5- 8- 7- 2

Phasing : 0-27-72-99-144-171-
216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.90...10.00

Del. quantity cm³/ : 10.8...11.0

100 s: (10.5...11.3)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm³/ : 1.2...1.7

100 s: (1.0...2.0)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 375
travel mm : 2.30...2.70

2nd speed rpm : 510
travel mm : 3.60...4.10

3rd speed rpm : 870
travel mm : 7.40...7.90

4th speed rpm : 1200
travel mm : 9.90...10.40

5th speed rpm : 1300
travel mm : 10.90...11.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 108.0...110.0

1000 : (105.0...113.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:

1st rack travel in: 8.90
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 69...75

Testing:

Speed rpm : 100
Minimum rack travel: 7.10
Speed rpm : 350
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

Speed rpm : 300...420

START CUT-OUT

Speed 1/min : 220 (0)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 100.0...104.0
1000 s: (97.0...107.0)
Spread cm³ : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...165.0
1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.40...4.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 21,6 A1
Edition : 26.04.91
Replaces : 11.86
Test oil : ISO-4113

Combination no. : 0 401 870 089

Injection pump
Pump designation : PE12P120A520/SRS428-1
EP type number : 0 411 820 034
Governor
Governor design. : RSUV300...750P10A356
Governor no. : 0 421 829 103

Customer-spec. information
Customer : MWM

Engine : D234V12

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00
Firing order : 1- 2- 9- 10- 5- 6-
11- 12- 3- 4- 7- 8

Phasing : 0-30-60-90-120-150-
180-210-240-270-300-
330

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 9.70...9.80

Del.quantity cm3/ : 17.1...17.5

100 s: (16.8...17.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 2.8...3.6

100 s: (2.5...3.9)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.00

RATED SPEED

1st version

Control lever

position degrees: 89...97

Testing:

1st rack travel in: 8.70

Speed rpm : 790...800

2nd rack travel in: 4.00

Speed rpm : 800...830

4th rack travel in: 950

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 62...70

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 310...370

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 750
Rack travel in m: 9.70...9.80
2nd speed rpm : 450
Rack travel in m: 9.70...9.80
3rd speed rpm : 310
Rack travel in m: 11.00...11.60

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 790...800

Remarks:

:

Full-load delivery is set on engine
according to engine test report.

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6012
Edition : 27.11.92
Replaces : 07.91
Test oil : ISO-4113

Combination no. : 0 401 876 296

Injection pump
Pump designation : PE6P120A320RS415-1
EP type number : 0 411 826 123
Governor
Governor design. : RSV250...1100P5A508
-2
Governor no. : 0 421 833 195

Customer-spec. information
Customer : DAF

Engine : DKX 1160

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 18.7...18.9

100 s: (18.4...19.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 187.0...189.0

1000 : (184.5...191.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 106...114

Testing:

1st rack travel in: 10.60

Speed rpm : 1135...1145

2nd rack travel in: 4.00

Speed rpm : 1200...1230

3rd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1430
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Speed rpm : 250
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 600...700

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.60...12.80
2nd speed rpm : 400
Rack travel in m: 12.60...12.80
3rd speed rpm : 300
Rack travel in m: 12.90...13.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 600
1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 300
Rack travel in m: 11.30...11.40
3rd pressure hPa : 255
Rack travel in m: 10.80...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 140.0...142.0
1000 s: (137.5...144.5)

BREAKAWAY

L10

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1135...1145

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 310.0...350.0
1000 s: (306.0...354.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.40...6.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 7,1 c 1
 Edition : 18.12.92
 Replaces : 10.89
 Test oil : ISO-4113
 Combination no. : 0 401 876 322
 Injection pump
 Pump designation : PE6P110A320RS497
 EP type number : 0 411 816 165
 Governor
 Governor design. : RSV200...1200P1A374
 -2
 Governor no. : 0 421 833 205

Customer-spec. information
 Customer : VOLVO

Engine : T1D 71A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.70...12.80
 Del.quantity cm3/ : 13.8...14.0
 100 s: (13.5...14.3)
 Spread cm3 : 0.4
 100 s: (0.7)

2nd speed rpm : 200.0
 Rack travel in mm : 5.2...5.4
 Del.quantity cm3/ : 1.7...2.1
 100 s: (1.4...2.3)
 Spread cm3 : 0.3
 100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del.quantity : 138.0...140.0
 1000 : (135.0...143.0)
 Spread cm3 : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Control lever
 position degrees: 53...61

Testing:
 1st rack travel in: 11.70
 Speed rpm : 1210...1220
 2nd rack travel in: 4.00
 Speed rpm : 1260...1290
 4th rack travel in: 1400

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 4.8

Speed rpm : 200

Rack travel in mm : 5.20...5.40

Rack travel in mm : 2.00

Speed rpm : 280...340

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1200

Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 900

Rack travel in m: 12.40...12.50

3rd pressure hPa : 380

Rack travel in m: 10.00...10.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm3/ : 82.0...84.0

1000 s: (79.0...87.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 185.0...215.0

1000 s: (181.0...219.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

L12

Speed rpm : 200

Rack travel in mm : 5.20...5.40

Del.quantity cm3/ : 17.0...21.0

1000 s: (14.5...23.5)

Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 6,1 q 1
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 401 876 340
 Injection pump
 Pump designation : PE6P110A320RS499
 EP type number : 0 411 816 169
 Governor
 Governor design. : RSV325...1400POA374
 -9
 Governor no. : 0 421 833 335

Customer-spec. information
 Customer : PENTA

Engine : TAMC61

1st version kW : 221.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50
 : (2.35...2.55)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm3 : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 114...122

Testing:

1st rack travel in: 10.10

Speed rpm : 1450...1460

2nd rack travel in: 4.00
Speed rpm : 1525...1555
4th rack travel in: 1630
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 79...87
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 3.7
Speed rpm : 325
Rack travel in mm : 3.60...3.80
Rack travel in mm : 2.00
Speed rpm : 450...510

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.00...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 370
Rack travel in m: 9.10...9.20
3rd pressure hPa : 720
Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1400
Del.quantity cm3/ : 121.0...125.0
1000 s: (118.0...128.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.0...63.0
1000 s: (58.0...66.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...165.0
1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
Edition : 21.01.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 876 345

Injection pump
Pump designation : PE6P120A32ORS3301
EP type number : 0 411 826 805
Governor
Governor design. : RSV250...1100POA374
-12
Governor no. : 0 421 833 375

Customer-spec. information
Customer : PENTA

Engine : TAMO 102 A

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.40...3.50
: (3.35...3.55)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 26.6...26.8

100 s: (26.3...27.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.0...6.2

Del.quantity cm³/ : 2.1...2.6

100 s: (1.8...2.8)

Spread cm³ : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1500

Del.quantity : 266.0...268.0

1000 : (263.0...271.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 11.70

Speed rpm : 1115...1125

2nd rack travel in: 4.00
Speed rpm : 1175...1205
3rd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.6
Speed rpm : 250
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 340...400

Aneroid/Altitude
Compensator Test

1st version:

Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.10...8.30
2nd pressure hPa : 160
Rack travel in m: 8.30...8.40
3rd pressure hPa : 980
Rack travel in m: 11.90...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 700
Del.quantity cm3/ : 284.0...290.0
1000 s: (281.0...293.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1115...1125

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 21.0...26.0
1000 s: (18.5...28.5)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Below-ground operation

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
Edition : 09.02.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 876 745

Injection pump
Pump designation : PE6P110A320RS3152
EP type number : 0 411 816 746
Governor
Governor design. : RSV200...1100P1A515
Governor no. : 0 421 833 209

Customer spec. information
Customer : VOLVO-PENTA

Engine : TD100G

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : 6.00x1.50x600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 17.5...17.7

100 s : (17.2...18.0)

Spread cm3 : 0.4

100 s : (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.0...4.2

Del.quantity cm3/ : 1.8...2.2

100 s : (-)

Spread cm3 : 0.3

100 s : (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 175.0...177.0

1000 : (172.0...180.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 11.60

Speed rpm : 1160...1170

2nd rack travel in: 4.00

Speed rpm : 1200...1230

4th rack travel in: 1340

Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 6...14
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 3.6
Speed rpm : 250
Rack travel in mm : 4.00...4.20
Rack travel in mm : 2.00
Speed rpm : 290...350

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...9.90
2nd pressure hPa : 640
Rack travel in m: 12.40...12.50
3rd pressure hPa : 250
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 122.0...124.50
1000 s: (119.0...127.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...190.0
1000 s: (156.0...194.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.00...4.20
Del.quantity cm³/ : 18.0...22.0
1000 s: (-)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,1 b4
 Edition : 18.12.92
 Replaces : 10.91
 Test oil : ISO-4113
 Combination no. : 0 401 876 789
 Injection pump
 Pump designation : PE6P120A320RS3189
 EP type number : 0 411 826 759
 Governor
 Governor design. : RSV650...750P4A421-9
 Governor no. : 0 421 833 364

Customer-spec. information
 Customer : PENTA

Engine : TD710G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 8.00...8.10

Del.quantity cm3/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 3.1...3.3

Del.quantity cm3/ : 1.9...2.5

100 s: (1.7...2.7)

Spread cm3 : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 7.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 772...785

4th rack travel in: 900
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 85...93
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 3.2
Speed rpm : 650
Rack travel in mm : 3.10...3.30
Rack travel in mm : 2.00
Speed rpm : 630...690

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 7.00
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 480.0...520.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650
Rack travel in mm : 3.10...3.30
Del.quantity cm³/ : 19.0...25.0
1000 s: (17.0...27.0)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
Edition : 21.01.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 876 794
Injection pump
Pump designation : PE6P120A32ORS3206
EP type number : 0 411 826 773
Governor
Governor design. : RSV250...1100P1A560
Governor no. : 0 421 833 398

Customer-spec. information
Customer : PENTA

Engine : TAD 730 P

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 8.80...8.90

Del.quantity cm3/ : 17.9...18.1

100 s: (18.6...19.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 179.0...181.0

1000 : (186.0...194.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 115...123

Testing:

1st rack travel in: 7.80

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.30...1.40

respect to setting at least 0.1 mm

LOW IDLE 1

Control lever

position degrees: 78...86

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.2

Speed rpm : 250

Rack travel in mm : 5.10...5.30

Rack travel in mm : 2.00

Speed rpm : 300...360

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 700

Pressure hPa : 1200

Rack travel mm : 8.80...8.90

Measurement

Speed 1/min : 700

1st pressure hPa : -

Rack travel in m: 7.10...7.30

2nd pressure hPa : 150

Rack travel in m: 7.30...7.40 *

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm³/ : 130.0...132.0

1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.80

Speed rpm : 1140...1150

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

* Increase in control-rod travel with

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 03.02.73
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 876 796

Injection pump
Pump designation : PE6P120A320LS3815-13
EP type number : 0 411 826 782
Governor
Governor design. : RSV675...1050POA820
-12
Governor no. : 0 421 833 401

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441A

1st version kW : 162.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 15.9...16.1

100 s: (15.6...16.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 675.0

Rack travel in mm : 3.1...3.7

Del. quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del. quantity : 159.0...161.0

1000 : (156.0...164.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 89...97

Testing:

1st rack travel in: 9.50
Speed rpm : 1110...1120
2nd rack travel in: 4.00
Speed rpm : 1140...1158
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 675
Rack travel in mm : 3.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 675
Rack travel in mm : 3.30...3.50
Rack travel in mm : 2.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1080
Rack travel in m: 10.50...10.60
2nd speed rpm : 700
Rack travel in m: 12.50...12.70
3rd speed rpm : 975
Rack travel in m: 11.30...11.50
4th speed rpm : 500
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 201.0...205.0
1000 s: (198.0...208.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1110...0

4th version

1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

APPLICATION

Forage harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.02.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 876 797
Injection pump
Pump designation : PE6P12DA320LS3815-13
EP type number : 0 411 826 782
Governor
Governor design. : RSV350...1000POA827
-3
Governor no. : 0 421 833 402

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441A

1st version kw : 177.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 105...125

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 17.1...17.3

100 s: (16.8...17.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.7...5.3

Del.quantity cm3/ : 1.4...2.2

100 s: (1.1...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Del.quantity : 171.0...173.0

1000 : (168.0...176.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 95...103

Testing:

1st rack travel in: 10.00
Speed rpm : 1030...0
2nd rack travel in: 4.00
Speed rpm : 1100...0
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 380...440

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del. quantity cm³/ : 172.0...176.0
1000 s: (169.0...179.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1030...1040

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

: LIEBHERR-TELF S

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 03.04.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 878 714
Injection pump
Pump designation : PE8P110A320LS3853
EP type number : 0 411 818 720
Governor
Governor design. : RSV400...900P1A544
Governor no. : 0 421 833 326

Customer-spec. information
Customer : LIEBHERR

Engine : D 9308 T

1st version kW : 260.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
: (3.75...3.95)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 3-
5- 4

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 890
Rack travel in mm : 13.80...13.90
Del. quantity cm³/ : 17.5...17.8
100 s : (17.2...18.0)
Spread cm³ : 0.4
100 s : (0.7)

2nd speed rpm : 400.0
Rack travel in mm : 5.8...6.0
Del. quantity cm³/ : 1.3...1.8
100 s : (1.0...2.0)
Spread cm³ : 0.4
100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 890
Del. quantity : 175.0...178.0
1000 : (172.5...180.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 87...95

Testing:
1st rack travel in: 12.80
Speed rpm : 930...940
2nd rack travel in: 4.00

Speed rpm : 945...975
3rd rack travel in: 4.00
Speed rpm : 950...980
4th rack travel in: 1120
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4
Speed rpm : 400
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 450...510

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 890
Rack travel in m: 13.80...13.90
2nd speed rpm : 500
Rack travel in m: 13.80...14.00
3rd speed rpm : 420
Rack travel in m: 15.00...15.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 176.0...184.0
1000 s: (173.0...187.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 930...940

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 13.0...18.0
1000 s: (10.5...20.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 31.07.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 878 717A
Injection pump
Pump designation : PE8P110A320LS3853-1
EP type number : 0 411 818 726
Governor
Governor design. : RSV400...1000P1A554
Governor no. : 0 421 833 376

Cust. part no. : 9273614

Customer-spec. information
Customer : LIEBHERR

Engine : D 9308 TI

1st version kW : 288.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
: (3.75...3.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 8- 7- 2- 6- 3-
5- 4

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900
Rack travel in mm : 14.60...14.70
Del. quantity cm³/ : 19.6...19.8
100 s: (19.3...20.1)
Spread cm³ : 0.4
100 s: (0.7)

2nd speed rpm : 400.0
Rack travel in mm : 5.8...6.0
Del. quantity cm³/ : 1.2...1.8
100 s: (0.9...1.2)
Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1500
Del. quantity : 196.0...198.0
1000 : (193.0...201.0)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 95...103

Testing:
1st rack travel in: 13.60

Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 985...1015
3rd rack travel in: 4.00
Speed rpm : 1010...1040
4th rack travel in: 1100
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 72...78
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 490...550

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 14.60...14.70
2nd speed rpm : 500
Rack travel in m: 14.60...14.80
3rd speed rpm : 350
Rack travel in m: 15.80...16.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1500
Rack travel mm : 14.60...14.70

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 13.60...13.80
2nd pressure hPa : 760
Rack travel in m: 14.20...14.40
3rd pressure hPa : 690
Rack travel in m: 13.90...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 171.0...173.0
1000 s: (168.0...176.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.60
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...12.0)
Spread cm3 : 6.00
1000 s: (10.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 27.11.92
Replaces : 06.92
Test oil : ISO-4113

Combination no. : 0 401 878 717B

Injection pump
Pump designation : PE8P110A320LS3853
EP type number : 0 411 818 720
Governor
Governor design. : RSV400...1000P1A554
Governor no. : 0 421 833 376

Customer-spec. information
Customer : LIEBHERR

Engine : D 9308 T

1st version kw : 255.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 3-
5- 4

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 16.6...16.8
100 s: (16.3...17.1)

Spread cm3 : 0.4
100 s: (0.7)

2nd speed rpm : 400.0
Rack travel in mm : 5.9...6.1
Del.quantity cm3/ : 1.2...1.8
100 s: (0.9...2.1)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1500
Del.quantity : 166.0...168.0
1000 : (163.0...171.0)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 96...102

Testing:
1st rack travel in: 12.40
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 980...1020

3rd rack travel in: 4.00
Speed rpm : 1020...1040
4th rack travel in: 1100
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.40...13.50
2nd speed rpm : 500
Rack travel in m: 13.40...13.60
3rd speed rpm : 350
Rack travel in m: 14.60...15.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1500
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 550

1st pressure hPa : -
Rack travel in m: 12.50...12.60
2nd pressure hPa : 620
Rack travel in m: 12.90...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 152.0...154.0
1000 s: (149.0...157.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 6.00
1000 s: (10.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 e1
Edition : 11.01.93
Replaces : 12.90
Test oil : ISO-4113

Combination no. : 0 402 035 028

Injection pump
Pump designation : PES5P120A720/3LS528
EP type number : 0 412 025 022
Governor
Governor design. : RQV325...1000PA876
-10
Governor no. : 0 421 813 900

Customer-spec. information
Customer : MAN

Engine : D2865LF/LU05

1st version kW : 198.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 13.00...14.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del. quantity cm3/ : 22.0...22.2

100 s: (21.7...22.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.7

Del. quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

travel mm : 9.60...9.80

2nd speed rpm : 325

travel mm : 0.70...1.10

3rd speed rpm : 550

travel mm : 3.50...4.10

4th speed rpm : 800

travel mm : 6.50...6.90

5th speed rpm : 1300

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000
Del.quantity : 220.0...222.0
1000 : (217.0...225.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 296...304

Testing:
1st rack travel in: 10.60
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 252...260

Testing:
Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 300
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION
Speed rpm : 340...460

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.60...11.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 150
Rack travel in m: 9.60...9.70
3rd pressure hPa : 390
Rack travel in m: 10.90...11.20

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 217.0...223.0
1000 s: (214.0...226.0)
Aneroid pressure h: 1000
Speed rpm : 550
Del.quantity cm3/ : 209.0...217.0
1000 s: (206.0...220.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.70
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MAN-NR. 3-7122

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 d1
Edition : 11.01.93
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 402 035 029

Injection pump
Pump designation : PES5P120A720/3LS528
EP type number : 0 412 025 022
Governor
Governor design. : RQ325/1000PA813-20
Governor no. : 0 421 801 567

Customer-spec. information
Customer : MAN

Engine : D2865LF/LU05

1st version kW : 198.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 13.00...14.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 22.0...22.2

100 s: (21.7...22.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.7

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 220.0...222.0

1000 : (217.0...225.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.60

Speed rpm : 1045...1060
2nd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 4.5

Testing:

Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.10...12.20
2nd speed rpm : 550
Rack travel in m: 12.50...12.90
3rd speed rpm : 825
Rack travel in m: 12.30...12.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 150
Rack travel in m: 9.60...9.70
3rd pressure hPa : 390
Rack travel in m: 10.90...11.20

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750

Del.quantity cm3/ : 217.0...223.0
1000 s: (214.0...226.0)
Aneroid pressure h: 1000
Speed rpm : 550
Del.quantity cm3/ : 209.0...217.0
1000 s: (206.0...220.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.70
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7121

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u2
Edition : 09.02.93
Replaces : 21.09.90
Test oil : ISO-4113

Combination no. : 0 402 036 736

Injection pump
Pump designation : PES6P120A720/3LS3255
EP type number : 0 412 026 739
Governor
Governor design. : RQ300/1100PA813-12
Governor no. : 0 421 801 518

Customer-spec. information
Customer : MAN

Engine : D2866LF01

1st version kW : 273.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 14.50...15.50
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10
& maximum rack tra: 14.5...15.5
Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.4

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack trave: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.80...14.90
2nd speed rpm : 700
Rack travel in m: 15.40...15.60
3rd speed rpm : 900
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.60...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 14.00...14.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

M10

1st version

Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm3/ : 230.0...236.0
1000 s: (227.0...239.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7889

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u1
 Edition : 21.01.93
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 402 036 740
 Injection pump
 Pump designation : PES6P120A720/3LS3255
 EP type number : 0 412 026 739
 Governor
 Governor design. : RQ300/1000PA813-13
 Governor no. : 0 421 801 529

Customer-spec. information
 Customer : MAN

Engine : D2866LF03

1st version kW : 273.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 14.50...15.50
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 6-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm³/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.3

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...2.10

2nd speed rpm : 550

travel mm : 5.90...6.10

3rd speed rpm : 900

travel mm : 6.10...6.30

4th speed rpm : 1070

travel mm : 6.60...7.10

5th speed rpm : 1175

travel mm : 10.10...10.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0
1000 : (239.0...247.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80
Speed rpm : 1045...1060
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 15.00...15.10
2nd speed rpm : 700
Rack travel in m: 15.30...15.50

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470

Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm3/ : 241.0...245.0
1000 s: (238.0...248.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 0-7050

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u5
Edition : 18.12.92
Replaces : 08.92
Test oil : ISO-4113

Combination no. : 0 402 036 743

Injection pump
Pump designation : PES6P120A72C/3LS3255
EP type number : 0 412 026 739
Governor
Governor design. : RQ300/1000PA813-19
Governor no. : 0 421 801 561

Customer-spec. information
Customer : MAN

Engine : D2866LF05

1st version kW : 272.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 14.50...15.50
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.10...15.20

Del.quantity cm3/ : 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 244.0...246.0

1000 : (241.0...249.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.10

Speed rpm : 1045...1060
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 15.10...15.20
2nd speed rpm : 700
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.10...15.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.80...12.00
2nd pressure hPa : 110
Rack travel in m: 12.10...12.20
3rd pressure hPa : 470
Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 241.0...247.0
1000 s: (238.0...250.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.10
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7037

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 18.12.92
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 402 036 752

Injection pump
Pump designation : PES6P120A720/3LS3255
-1

EP type number : 0 412 026 756

Governor

Governor design. : RQV300...1000PA876
-13

Governer no. : 0 421 814 010

Customer-spec. information

Customer : MAN

Engine : D2866LE102

1st version kw : 260.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

M15

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 14.50...15.50

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Phasing :

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.70...14.80

Del. quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.2

Del. quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

travel mm : 9.90...10.10

2nd speed rpm : 300

travel mm : 1.50...1.70

3rd speed rpm : 500

travel mm : 3.30...3.90

4th speed rpm : 800

travel mm : 6.80...7.20

5th speed rpm : 1300

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 12.40...15.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1200
Del.quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 294...302

Testing:

1st rack travel in: 13.70
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 251...259

Testing:

Speed rpm : 200
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 290...400

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 14.70...14.80
2nd speed rpm : 1000
Rack travel in m: 14.50...14.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.70...14.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.40...11.60
2nd pressure hPa : 210
Rack travel in m: 11.80...11.90
3rd pressure hPa : 570

Rack travel in m: 13.40...13.80

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 230.0...236.0
1000 s: (227.0...239.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7191

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA
Edition : 03.04.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 079

Injection pump
Pump designation : PES6P120A820LS249
EP type number : 0 412 026 024
Governor
Governor design. : RGV300...1000PA204-4
R
Governor no. : 0 421 813 121

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8217.12.024

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 443 022

Opening
pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter
x Wall thickness
x Length mm : 8.00X2.00X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 7.50...7.60

Del.quantity cm³/ : 12.2...12.4
100 s : (11.9...12.7)

Spread cm³ : 0.5
100 s : (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.0...6.1
Del.quantity cm³/ : 1.6...2.2
100 s : (1.3...2.5)
Spread cm³ : 0.6
100 s : (0.9)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1000
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 122.0...124.0
1000 : (119.0...127.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 53...61

Testing:
1st rack travel in: 6.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 6.00...6.10
Rack travel in mm : 2.00
Speed rpm : 415...475

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 6.50
Speed rpm : 1040...1050

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 a 6
Edition : 23.10.92
Replaces : 09.92
Test oil : ISO-4113

Combination no. : 0 402 046 313

Injection pump
Pump designation : PES6P120A32ORS419
EP type number : 0 412 026 037
Governor
Governor design. : RQV275...1050PA495-8
Governor no. : 0 421 813 482

Customer-spec. information
Customer : RVI

Engine : M1DS062045

1st version kW : 169.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 18.0...18.2

100 s: (17.7...18.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 2.3...2.7

100 s: (2.0...3.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.20

2nd speed rpm : 450
travel mm : 3.30...3.80

3rd speed rpm : 800
travel mm : 5.70...6.00

4th speed rpm : 1050
travel mm : 7.60...7.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 180.5...182.5

1000 : (177.5...185.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:

1st rack travel in: 9.40
Speed rpm : 1125...1135
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 175
Minimum rack travel: 6.80
Speed rpm : 275
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 275...390

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.40...10.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.20...8.60
2nd pressure hPa : 360
Rack travel in m: 9.90...10.00
3rd pressure hPa : 160
Rack travel in m: 8.70...9.00

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 184.0...189.0
1000 s: (181.0...191.0)
Aneroid pressure h: -

M20

Speed rpm : 500
Del.quantity cm³/ : 112.5...114.5
1000 s: (109.5...117.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 151.0...171.0
1000 s: (147.0...175.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 23.5...27.5
1000 s: (20.5...30.5)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 f1
 Edition : 22.01.93
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 402 046 758
 Injection pump
 Pump designation : PES6P120A320RS3139
 EP type number : 0 412 026 718
 Governor
 Governor design. : RQV275...950PA728-1
 Governor no. : 0 421 813 465

Customer-spec. information
 Customer : RVI

Engine : MIDR 063540

1st version kw : 243.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.6

Del.quantity cm3/ : 2.2...2.6

100 s: (1.9...2.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 1.30...1.70

2nd speed rpm : 450
 travel mm : 3.30...3.70

3rd speed rpm : 800
 travel mm : 5.60...6.00

4th speed rpm : 950
 travel mm : 6.70...6.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:

1st rack travel in: 11.50
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.50
2nd pressure hPa : 200
Rack travel in m: 10.00...10.10
3rd pressure hPa : 520
Rack travel in m: 11.60...11.90

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm³/ : 198.0...204.0
1000 s: (195.0...207.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 118.0...120.0
1000 s: (115.0...123.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 155.0...185.0
1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60
Del.quantity cm³/ : 22.0...26.0
1000 s: (19.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 n
Edition : 11.01.93
Replaces : 8.87
Test oil : ISO-4113

Combination no. : 0 402 046 759

Injection pump
Pump designation : PES6P110A720RS3104
EP type number : 0 412 016 712
Governor
Governor design. : RQ900PA738
Governor no. : 0 421 801 278

Customer spec. information
Customer : KHD

Engine : BF6L413FR/C

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 14.7...14.9

100 s: (14.4...15.2)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.3

Del. quantity cm³/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm³ : 0.4

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del. quantity : 147.0...149.0

1000 : (144.0...152.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.60

Speed rpm : 900...905

2nd rack travel in: 5.50

Speed rpm : 936...945

4th rack travel in: 1050

Speed rpm : 0.00...1.00

START CUT-OUT

Speed 1/min : 750 (0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 900...905

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 170.0...200.0

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u
 Edition : 1 01.93
 Replaces : 10.88
 Test oil : ISO-4113
 Combination no. : 0 402 046 783
 Injection pump
 Pump designation : PES6P110A72ORS31C4
 EP type number : 0 412 016 712
 Governor
 Governor design. : RQV300...1150PA850
 Governor no. : 0 421 813 598

Customer-spec. information
 Customer : KHD

Engine : BF6L513R

1st version kW : 177.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 15.1...15.3

100 s: (14.8...15.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.30...1.40

2nd speed rpm : 390
 travel mm : 2.40...2.70

3rd speed rpm : 460
 travel mm : 2.80...3.20

4th speed rpm : 1190
 travel mm : 8.40...8.50

5th speed rpm : 1290
 travel mm : 9.40...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900

Del.quantity : 151.0...153.0

1000 : (148.0...156.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.40
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 83...91

Testing:
Speed rpm : 100
Minimum rack travel: 9.40
Speed rpm : 300
Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

Speed rpm : 320...480

TORQUE CONTROL

Dimension a mm : 0.10
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 13.40...13.50
2nd speed rpm : 600
Rack travel in m: 13.50...13.70
3rd speed rpm : 950
Rack travel in m: 13.45...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 450
Pressure hPa : 900
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 12.40...12.60
2nd pressure hPa : 420
Rack travel in m: 13.20...13.30
3rd pressure hPa : 360
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm³/ : 156.0...160.0
1000 s: (154.0...162.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 w
Edition : 21.01.93
Replaces : 11.87
Test oil : ISO-4113

Combination no. : 0 402 046 792

Injection pump
Pump designation : PES6P110A72ORS3104
EP type number : 0 412 016 712
Governor
Governor design. : RQV400...1100PA882
Governor no. : 0 421 813 681

Customer-spec. information
Customer : KHD

Engine : BF6L513R

1st version kW : 176.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.90...13.00

Del. quantity cm³/ : 14.1...14.3

100 s : (13.8...14.6)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 7.5...7.7

Del. quantity cm³/ : 1.2...1.8

100 s : (1.0...2.0)

Spread cm³ : 0.4

100 s : (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400
travel mm : 0.80...1.20

2nd speed rpm : 600
travel mm : 2.80...3.60

3rd speed rpm : 900
travel mm : 5.60...6.20

4th speed rpm : 1140
travel mm : 8.20...8.40

5th speed rpm : 1230
travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del. quantity : 141.0...143.0

1000 : (138.0...146.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 11.90
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 86...94

Testing:

Speed rpm : 300
Minimum rack travel: 9.20
Speed rpm : 400
Rack travel in mm : 7.50...7.70

CONSTANT REGULATION

Speed rpm : 400...650

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.90...13.00
2nd speed rpm : 650
Rack travel in m: 13.20...13.30
3rd speed rpm : 750
Rack travel in m: 13.10...13.20
4th speed rpm : 950
Rack travel in m: 12.90...13.10

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 450
Pressure hPa : 700
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 400
Rack travel in m: 13.10...13.20
3rd pressure hPa : 300
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 320 (340)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 650
Del.quantity cm3/ : 148.0...152.0
1000 s: (145.0...155.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Wheel loader

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 v 1
 Edition : 11.01.93
 Replaces : 07.88
 Test oil : ISO-4113
 Combination no. : 0 402 046 794
 Injection pump
 Pump designation : PES6P110A720RS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RQV300...1075PA862-1
 Governor no. : 0 421 813 684

Customer-spec. information
 Customer : KHD

Engine : BF6L513 R/C

1st version kW : 150.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

N01

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1075
 Rack travel in mm : 12.40...12.50
 Del.quantity cm3/ : 13.1...13.3
 100 s: (12.8...13.6)
 Spread cm3 : 0.4
 100 s: (0.7)
 2nd speed rpm : 300.0
 Rack travel in mm : 7.6...7.8
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.4)
 Spread cm3 : 0.4
 100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.50
 2nd speed rpm : 450
 travel mm : 2.60...3.20
 3rd speed rpm : 700
 travel mm : 4.80...5.40
 4th speed rpm : 1110
 travel mm : 7.90...8.10
 5th speed rpm : 1230
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1140
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1075
 Del.quantity : 131.0...133.0
 1000 : (128.0...136.0)
 Spread cm3 : 4.00
 1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 115...123

Testing:

1st rack travel in: 11.40

Speed rpm : 1110...1120

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 82...90

Testing:

Speed rpm : 100

Minimum rack travel: 9.10

Speed rpm : 300

Rack travel in mm : 7.60...7.80

CONSTANT REGULATION

Speed rpm : 300...480

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm³/ : 133.0...139.0
1000 s: (130.0...142.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 12,2 c
Edition : 27.11.92
Replaces : 03.89
Test oil : ISO-4113

Combination no. : 0 402 046 797

Injection pump
Pump designation : PES6P120A320RS3212
EP type number : G 412 026 731
Governor
Governor design. : RGV250...1050PA794-2
Governor no. : 0 421 813 698

Customer-spec. information
Customer : PERKINS

Engine : EAGLE TX

1st version kW : 240.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.60...14.70

Del.quantity cm3/ : 23.9...24.1

100 s: (23.6...24.4)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...2.0)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.30

2nd speed rpm : 350

travel mm : 2.90...3.50

3rd speed rpm : 700

travel mm : 4.00...4.60

4th speed rpm : 1000

travel mm : 7.40...7.60

5th speed rpm : 1100

travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 239.0...241.0
1000 : (236.0...244.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 13.60
Speed rpm : 980...990
2nd rack travel in: 4.00
Speed rpm : 1085...1115
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 81...89

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 250...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.20...12.30
2nd pressure hPa : 900
Rack travel in m: 14.10...14.20
3rd pressure hPa : 625
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

NO4

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 238.0...242.0
1000 s: (235.0...245.0)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 179.0...181.0
1000 s: (176.0...184.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.60
Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (126.0...174.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u
Edition : 11.01.93
Replaces : 08.89
Test oil : ISO-4113

Combination no. : 0 402 046 799

Injection pump
Pump designation : PES6P110A720RS3104
EP type number : 0 412 016 712
Governor
Governor design. : RQV300...1075PA850-1
Governor no. : 0 421 813 708

Customer-spec. information
Customer : KHD

Engine : BF6L413FR/513R

1st version kW : 193.0
Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 13.40...13.50

Del. quantity cm³/ : 14.5...14.7

100 s : (14.2...15.0)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del. quantity cm³/ : 1.6...2.1

100 s : (1.4...2.4)

Spread cm³ : 0.4

100 s : (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.20...1.40

2nd speed rpm : 400
travel mm : 2.70...3.30

3rd speed rpm : 600
travel mm : 4.20...4.80

4th speed rpm : 1120
travel mm : 8.40...8.60

5th speed rpm : 1245
travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Aneroid pressure h : 900

Del. quantity : 145.0...147.0

1000 : (142.0...150.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 12.40
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 85...93

Testing:

Speed rpm : 100
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 300...490

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 13.40...13.50
2nd speed rpm : 600
Rack travel in m: 13.60...13.80
3rd speed rpm : 950
Rack travel in m: 13.50...13.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 450
Pressure hPa : 900
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 12.60...12.80
2nd pressure hPa : 420
Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 240 (260)

N06

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm3/ : 149.0...154.0
1000 s: (146.5...156.5)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Adjust shutoff device to 0.5...1.5 mm.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u 2
Edition : 11.01.93
Replaces : 08.88
Test oil : ISO-4113

Combination no. : 0 402 046 801

Injection pump
Pump designation : PES6P110A720RS3104
EP type number : 0 412 016 712
Governor
Governor design. : RGV300...1150PA850-2
Governor no. : 0 421 813 718

Customer-spec. information
Customer : KHD

Engine : BF6L513RC

1st version kW : 231.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

N07

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 17.2...17.4

100 s : (16.9...17.7)

Spread cm3 : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.7...7.9

Del.quantity cm3/ : 1.6...2.1

100 s : (1.4...2.4)

Spread cm3 : 0.4

100 s : (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.20...1.40

2nd speed rpm : 350
travel mm : 1.90...2.50

3rd speed rpm : 650
travel mm : 4.20...4.80

4th speed rpm : 1195
travel mm : 8.40...8.60

5th speed rpm : 1320
travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900

Del.quantity : 172.0...174.0

1000 : (169.0...177.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 13.40
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1305...1335
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 100
Minimum rack travel: 9.30
Speed rpm : 300
Rack travel in mm : 7.70...7.90

CONSTANT REGULATION
Speed rpm : 300...490

TORQUE CONTROL
Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 14.40...14.50
2nd speed rpm : 700
Rack travel in m: 14.60...14.80
3rd speed rpm : 950
Rack travel in m: 14.50...14.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 450
Pressure hPa : 900
Rack travel mm : 14.60...14.80

Measurement
Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 530
Rack travel in m: 14.00...14.10
3rd pressure hPa : 390
Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 176.0...180.0
1000 s: (173.0...183.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u 3
Edition : 11.01.93
Replaces : 04.89
Test oil : ISO-4113

Combination no. : 0 402 046 805

Injection pump
Pump designation : PES6P110A720RS3104
EP type number : 0 412 016 712
Governor
Governor design. : RGV300...1075PA850-3
Governor no. : 0 421 813 743

Customer-spec. information
Customer : KHD

Engine : BF6L413FRC/513RC

1st version kW : 198.0
Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.40

2nd speed rpm : 450

travel mm : 2.60...3.20

3rd speed rpm : 650

travel mm : 4.70...5.30

4th speed rpm : 1110

travel mm : 8.20...8.40

5th speed rpm : 1250

travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Aneroid pressure h: 900

Del.quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 13.00
Speed rpm : 1105...1115
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 84...92

Testing:

Speed rpm : 100
Minimum rack travel: 9.40
Speed rpm : 300
Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

Speed rpm : 300...520

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 14.00...14.10
2nd speed rpm : 700
Rack travel in m: 14.20...14.40
3rd speed rpm : 850
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.40...12.60
2nd pressure hPa : 510
Rack travel in m: 13.70...13.80
3rd pressure hPa : 375
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 170.0...174.0
1000 s: (168.0...176.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1105...1115

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BUSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u 4
 Edition : 11.01.93
 Replaces : 10.89
 Test oil : ISO-4113
 Combination no. : 0 402 046 806
 Injection pump
 Pump designation : PES6P110A72ORS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RGV300...1150PA850-4
 Governor no. : 0 421 813 745

Customer-spec. information
 Customer : KHD

Engine : BF6L513RC

1st version kW : 210.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 14.00...14.10
 Del. quantity cm³/ : 16.5...16.7
 100 s : (16.2...17.0)
 Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 7.4...7.6
 Del. quantity cm³/ : 1.2...1.6
 100 s : (0.9...1.9)
 Spread cm³ : 0.4
 100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.40
 2nd speed rpm : 450
 travel mm : 2.60...3.20
 3rd speed rpm : 650
 travel mm : 3.30...3.90
 4th speed rpm : 1195
 travel mm : 8.30...8.50
 5th speed rpm : 1330
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1190
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h : 900
 Del. quantity : 165.0...167.0
 1000 : (162.0...170.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 13.00
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1315...1345
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 84...92

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 7.40...7.60

CONSTANT REGULATION

Speed rpm : 300...550

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 14.00...14.10
2nd speed rpm : 750
Rack travel in m: 14.20...14.40
3rd speed rpm : 850
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.10...12.30
2nd pressure hPa : 510
Rack travel in m: 13.70...13.80
3rd pressure hPa : 375
Rack travel in m: 12.60...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 750
Del. quantity cm³/ : 170.0...174.0
1000 s: (168.0...176.0)
Aneroid pressure h: -
Speed rpm : 450
Del. quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack travel: 13.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a17
Edition : 26.06.92
Replaces : 04.91
Test oil : ISO-4113

Combination no. : 0 402 046 807

Injection pump
Pump designation : PES6P110A820LS3131
EP type number : 0 412 016 715
Governor
Governor design. : RQV300...1100PA916
Governor no. : 0 421 813 748

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447

1st version kW : 168.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
: (4.25...4.45)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.6...7.8

Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)

Spread cm3 : 0.4
100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.60...1.90

2nd speed rpm : 425
travel mm : 3.30...3.70

3rd speed rpm : 920
travel mm : 5.70...6.10

4th speed rpm : 1155
travel mm : 7.90...8.40

5th speed rpm : 1255
travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1160
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100

Del.quantity : 137.0...139.0
1000 : (134.5...141.5)
Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 10.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 85...93

Testing:
Speed rpm : 200
Minimum rack travel: 9.20
Speed rpm : 300
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION
Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 113.0...116.0
1000 s: (110.0...119.0)
Spread cm3 : 5.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 27.11.92
 Replaces : 09.92
 Test oil : ISO-4113
 Combination no. : 0 402 046 807A
 Injection pump
 Pump designation : PES6P110A820LS3131
 EP type number : 0 412 016 715
 Governor
 Governor design. : RGV300...1100PA916
 Governor no. : 0 421 813 748

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : 01447C

1st version kW : 177.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 13.8...14.0

100 s: (13.5...14.2)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.6

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.40

2nd speed rpm : 450

travel mm : 3.40...3.80

3rd speed rpm : 1150

travel mm : 7.90...8.30

4th speed rpm : 1225

travel mm : 9.10...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 138.0...140.0

1000 : (135.5...142.5)

Spread cm³ : 4.00
1000 : (8.00)

Remarks:

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 10.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 85...93

Testing:

Speed rpm : 200
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION

Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del. quantity cm³/ : 116.0...119.0
1000 s: (113.0...122.0)
Spread cm³ : 5.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 f
Edition : 21.01.93
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 402 046 811

Injection pump
Pump designation : PES6P110A320RS3233
EP type number : 0 412 016 728
Governor
Governor design. : RQV275...1175PA833-4
Governor no. : 0 421 813 762

Customer-spec. information
Customer : RVI

Engine : MIDR 0602260

1st version kW : 166.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10
& maximum rack tra: 13.0...14.0
Difference ° CS : 4.50...6.00

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 11.7...11.9

100 s: (11.4...12.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.6

Del.quantity cm3/ : 3.2...3.8

100 s: (2.9...4.0)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.40...0.60

2nd speed rpm : 450
travel mm : 2.90...3.50

3rd speed rpm : 800
travel mm : 4.60...5.00

4th speed rpm : 1175
travel mm : 6.90...7.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1430

Rack travel in mm : 12.20...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 1000
Del.quantity : 117.0...119.0
1000 : (114.5...121.5)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:

1st rack travel in: 12.50
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1405...1435
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...10.00
2nd pressure hPa : 200
Rack travel in m: 10.60...10.70
3rd pressure hPa : 440
Rack travel in m: 12.40...12.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm3/ : 111.5...116.5
1000 s: (108.5...119.5)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 51.0...53.0
1000 s: (48.5...55.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 82.0...102.0
1000 s: (78.0...106.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60
Del.quantity cm3/ : 32.0...38.0
1000 s: (29.5...40.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

Start-of-delivery blocking at start of
delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 y
Edition : 21.01.93
Replaces : 07.90
Test oil : ISO-4113

Combination no. : 0 402 046 817

Injection pump
Pump designation : PES6P110A720RS3104
EP type number : 0 412 016 712
Governor
Governor design. : RQV300...1150FA850-5
Governor no. : 0 421 813 871

Customer-spec. information
Customer : KHD

Engine : BF6L513R

1st version kW : 177.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 15.1...15.3

100 s : (14.8...15.6)

Spread cm3 : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.6...2.2

100 s : (1.3...2.4)

Spread cm3 : 0.4

100 s : (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 2.10...2.50

2nd speed rpm : 450
travel mm : 3.40...4.00

3rd speed rpm : 700
travel mm : 5.10...5.70

4th speed rpm : 1190
travel mm : 8.90...9.10

5th speed rpm : 1300
travel mm : 10.00...10.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900

Del.quantity : 151.0...153.0

1000 : (148.0...156.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 119...127

Testing:

1st rack travel in: 12.40
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 89...97

Testing:

Speed rpm : 100
Minimum rack travel: 9.40
Speed rpm : 300
Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

Speed rpm : 320...520

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 450
Pressure hPa : 900
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 450

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 510

Rack travel in m: 13.20...13.30

3rd pressure hPa : 410

Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 600

Del.quantity cm3/ : 153.0...157.0
1000 s: (151.0...159.0)

Aneroid pressure h: -

Speed rpm : 450

Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
Edition : 25.09.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 823

Injection pump
Pump designation : PES6P120A320RS3279
EP type number : 0 412 026 748
Governor
Governor design. : RQ275/1050PA999
Governor no. : 0 421 801 585

Customer-spec. information
Customer : RVI

Engine : MIDR D62045 D/3

1st version kW : 222.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.9...6.3

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 1000

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.80

Speed rpm : 1130...1145

2nd rack travel in: 4.00

Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 6.1

Testing:

Speed rpm : 175
Minimum rack trave: 7.60
Speed rpm : 275
Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 650
Rack travel in m: 11.80...11.90
2nd speed rpm : 1050
Rack travel in m: 11.30...11.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.30...8.50
2nd pressure hPa : 280
Rack travel in m: 9.40...9.50
3rd pressure hPa : 560
Rack travel in m: 11.00...11.40

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm³/ : 173.0...179.0
1000 s: (170.0...182.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 85.0...87.0
1000 s: (82.0...90.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1130...1145

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...175.0
1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.90...6.30
Del.quantity cm³/ : 19.0...23.0
1000 s: (16.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery blocking at start of
delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 25.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 824
 Injection pump
 Pump designation : PES6P120A320RS3279-1
 EP type number : 0 412 026 758
 Governor
 Governor design. : RQ275/1050PA999-5
 Governor no. : 0 421 801 663

Customer-spec. information
 Customer : RVI

Engine : MIHR 062045 A/3

1st version kW : 188.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 080

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 15.4...15.6

100 s: (15.1...15.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.7...5.1

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.4)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 154.0...156.0

1000 : (151.0...159.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.00

Speed rpm : 1130...1145

2nd rack travel in: 4.00

Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 6.0

Testing:

Speed rpm : 175
Minimum rack travel: 7.50
Speed rpm : 275
Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 11.00...11.10
2nd speed rpm : 1050
Rack travel in m: 11.30...11.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 160
Rack travel in m: 10.20...10.30
3rd pressure hPa : 220
Rack travel in m: 10.50...10.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 148.0...154.0
1000 s: (145.0...157.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 111.0...113.0
1000 s: (108.0...116.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1130...1145

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...165.0
1000 s: (141.0...169.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.80...6.20
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.0...24.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery blocking at start of
delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 y 1
Edition : 11.01.93
Replaces : 11.91
Test oil : ISO-4113
Combination no. : G 402 046 832
Injection pump
Pump designation : PES6P110A72ORS3104
EP type number : 0 412 016 712
Governor
Governor design. : RGV350...1100PA850-6
Governor no. : 0 421 813 975

Customer-spec. information
Customer : KHD

Engine : BF6L513RC

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.90...14.00

Del. quantity cm³/ : 16.3...16.5

100 s : (16.0...16.8)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 7.8...8.0

Del. quantity cm³/ : 1.6...2.1

100 s : (1.4...2.4)

Spread cm³ : 0.4

100 s : (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.10...1.30

2nd speed rpm : 410

travel mm : 2.60...3.20

3rd speed rpm : 590

travel mm : 3.90...4.50

4th speed rpm : 1160

travel mm : 8.60...8.80

5th speed rpm : 1215

travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 163.0...165.0

1000 : (160.0...168.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.90
Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1310
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 84...92

Testing:
Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 350
Rack travel in mm : 7.80...8.00

CONSTANT REGULATION
Speed rpm : 400...470

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.90...14.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 450
Rack travel in m: 13.40...13.50
3rd pressure hPa : 370
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 162.0...166.0
1000 s: (159.0...169.0)
Spread cm3 : 6.00
1000 s: (9.00)
Aneroid pressure h: -

Speed rpm : 450
Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0)
Spread cm3 : 4.00
1000 s: (7.50)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
Edition : 22.01.93
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 402 046 836

Injection pump
Pump designation : PES6P120A320RS3303
EP type number : 0 412 026 755
Governor
Governor design. : RQV275...1050PA1038K
Governor no. : 0 421 815 313

Customer-spec. information
Customer : RVI

Engine : MIDR 062045 J/3

1st version kW : 169.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 15.5...15.7

100 s: (15.2...16.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.3...5.7

Del.quantity cm³/ : 2.2...2.6

100 s: (1.9...2.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1140

travel mm : 8.90...9.10

2nd speed rpm : 275

travel mm : 1.20...1.40

3rd speed rpm : 380

travel mm : 2.90...3.50

4th speed rpm : 740

travel mm : 6.00...6.40

5th speed rpm : 1480

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 7.90...11.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 155.0...157.0

1000 : (152.0...160.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 283...291

Testing:
1st rack travel in: 10.00
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 238...246

Testing:
Speed rpm : 200
Minimum rack travel: 6.30
Speed rpm : 275
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 280...380

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.00...11.10
2nd speed rpm : 700
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm3/ : 133.0...139.0
1000 s: (130.0...142.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

N28

Speed rpm : 100
Del.quantity cm3/ : 155.0...185.0
1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : -5.30...-5.70
Del.quantity cm3/ : 22.0...26.0
1000 s: (19.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery blocking at start of
delivery of cylinder no. 1.